

Worcester Polytechnic Institute Digital WPI

Interactive Qualifying Projects (All Years)

Interactive Qualifying Projects

December 2007

Patent Examiner Recruitment

Annemarie Louise Field
Worcester Polytechnic Institute

Connor M. McGrath
Worcester Polytechnic Institute

Elaine Nichols
Worcester Polytechnic Institute

Follow this and additional works at: <https://digitalcommons.wpi.edu/iqp-all>

Repository Citation

Field, A. L., McGrath, C. M., & Nichols, E. (2007). *Patent Examiner Recruitment*. Retrieved from <https://digitalcommons.wpi.edu/iqp-all/3154>

This Unrestricted is brought to you for free and open access by the Interactive Qualifying Projects at Digital WPI. It has been accepted for inclusion in Interactive Qualifying Projects (All Years) by an authorized administrator of Digital WPI. For more information, please contact digitalwpi@wpi.edu.

Patent Examiner Recruitment

An Interactive Qualifying Project
For the USPTO

Submitted to the Faculty
of the

WORCESTER POLYTECHNIC INSTITUTE

In Partial Fulfillment of the requirements for the

Degree of Bachelor of Science

By

Annemarie L. M. Field

Connor McGrath

Elaina Nichols

Date: December 12, 2007

Approved by:

1. Student
2. Internet
3. Recruit

Professor Holly Keyes Ault, Primary Advisor

Professor James P. Hanlan, Co-Advisor

Mr. James Dwyer, USPTO Liaison

*This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review.

Abstract

To develop a college career site and improve the USPTO's recruitment strategy, the team researched recruitment, web design, personnel psychology, job search behavior, and retention information from literature and sources in the USPTO and private industry. Through this research, the team developed recommendations for the necessary content, design and structure of an attractive, informational college career site. In addition, the team was able to form suggestions for overall recruitment and university outreach, geared toward recruiting top engineers and scientists.

Executive Summary

The United States Patent and Trademark Office (USPTO) is the federal agency, under the Department of Commerce, which is responsible for issuing patents and trademarks. The protection of intellectual property has a long history in America, as these protections are provided for in the United States Constitution. The patent system greatly affects the economy, and as Abraham Lincoln said in 1859, “the patent system added the fuel of interest to the fire of genius.” The quid-pro-quo system of the USPTO offers inventors up to twenty years of protection in exchange for the public’s use of the intellectual property, once the term of exclusive rights is over.

The drive of discovery and innovation has been fueled by the security and income rights which the USPTO affords to inventors. In the year 2005 alone, authors and inventors filed for 417, 508 patent applications (“Mission and Organization,” 2006). Every year, the number of patent applications increases, which demonstrates a global awareness of the patent’s ability to strengthen economy. With the ever increasing submission of patent applications, the office has accumulated a backlog of three quarters of a million applications, which need to be reviewed by the USPTO’s 6,025 Patent Examiners (Exit Survey, 2007). In order to help eliminate the current backlog and prohibit it from increasing in numbers, the USPTO wants to hire 1,200 engineers and scientists per year for the next four to five years. Due to the unique nature of the job and the high demand for highly trained and educated technical employees in the private sector, the USPTO is having difficulty recruiting and retaining skilled employees.

In order to help the USPTO recruit and retain 1,200 engineers and scientists annually, the team from WPI worked closely with employees from the office to explore the Patent Examiner job. The team also consulted with Human Resources experts from industry. Also, prior to arrival at the USPTO, the team conducted a review of the literature pertaining to recruitment methods and tools. Studies on recruitment methods, business and human resources psychology, retention, web design, usability, content and aesthetics were helpful in gaining information for the project.

The team looked at current recruitment tools used and the effectiveness of each one. Newspaper advertisements, radio advertisements, employee referrals, headhunting, placement offices and career fairs, and Internet career sites are the various methods used

by Human Resources professionals to recruit employees. With over a billion Internet users (Internet World Stats, 2007) and 90% of Fortune 500 companies using some type of on-line recruitment (Feldman, 2002), it is apparent that career web sites are one of the most popular methods to find employees.

In order to acquire the information necessary to make recommendations for developing a strong and effective college recruitment web site and improving the overall recruitment strategy of the USPTO, the team explored various methods. These methods included employee referrals, career web sites, traditional advertising, and their effectiveness. Interviews were conducted with Patent Examiners, Supervisory Patent Examiners, and Human Resource professionals to enlighten the team about the patent examination process, strategies used to attract Examiners, and skills necessary to successfully examine patent applications. HR personnel from both the USPTO and other engineering companies in the private sector were interviewed to gain outside perspective on recruitment techniques and which strategies currently work to recruit college seniors. The team held brief interviews with USPTO job candidates, who are currently in the selection process, to identify how they found out about the job and why it was attractive to them. Two union officials were also interviewed in order to help the team establish the leading reasons why Patent Examiners choose to resign.

In addition, a web developer for a large scale recruitment web site, Monster.com, was interviewed in order to obtain information on the effect of usability of a web site. The team conducted a focus group with new Patent Examiners, who have been working at the USPTO for less than a year. The goal was to collect information on the USPTO's current recruitment and hiring strategy from the perspective of recently hired employees. The team also conducted a survey with WPI seniors to find out what methods college engineers and scientists use to find a job. Another method employed was the examination of career development center web sites at prominent engineering and science schools, which would be good places for the USPTO to recruit at and with which to develop relationships. Furthermore, the team spoke with the Director of Post-Graduate Planning at Olin College to identify the popular means students use to find a job and what aspects of the job affect their decision to apply and accept a position. Through these methods, the team was able to examine the most effective recruitment strategies, understand the Patent Examiner job, identify the effective design, aesthetics and usability

aspects of a career web site, and find patterns and trends in web content that attracts engineering and science graduates.

By employing various methods, the team was able to collect information and draw conclusions about various aspects of recruitment, such as:

- Effective recruitment methods
- Current USPTO recruitment strategies
- The attractive and realistic features of the Patent Examiner position
- Effective content for a college career site
- Retention rates at the USPTO, and
- Various forms of recruitment outreach.

The team discovered that, although most USPTO hires are through employee referrals, college students find career fairs to be the best way to find a job. People apply for the Patent Examiner position because of the ability to learn about cutting edge new technology, the federally enhanced salary, work environment, law school reimbursement, the hoteling program which allows Examiners to work from home, the GS career scale, the sign-up bonus, and the location.

However, when applicants apply online, they find the current application process to be confusing, lengthy and inconsistent. The career web site needs to have a limited amount of text per page in order to be simple and easy to use. In order for the web site to be navigable and easy to use, the menu should be displayed on the left as a bulleted list of items. There should be a design consistency throughout each page of the web site. Also, the web site should contain information regarding the specifics of the job, the company culture, benefits, a realistic job preview, recruitment and career events at universities, and contact information. In addition, the team thinks that it would be beneficial to include employee testimonials and a job compatibility assessment test on the web site.

Although the company offers many attractive benefits, attrition at the USPTO is high among new hires because of the nature of the work. This includes the production system, culture and environment, work/life balance, and management. By informing all applicants of the nature of the job and hiring the right employee for the job, the USPTO can lower their attrition rates.

Hiring and retaining engineers and scientists is a difficult task in today's competitive market. In order to reach the hiring goal, the USPTO must look for new and

creative ways to recruit engineers and scientists, and develop stronger outreach programs with universities. The team found that it is important to establish a strong and consistent presence on university campuses by attending career fairs, broadcasting on college radio stations, establishing a co-op program, holding information sessions or resume building workshops, developing an IP class, and offering scholarships.

Through the collection and analysis of information during the seven weeks at the USPTO, the team was able to develop a series of recommendations for a USPTO college career web site, as well as recommendations for the overall recruitment strategy. The team suggests that there be a link off of the main USPTO page to the College Recruitment Site. The web site's menu should appear on the left side of each page. The font of the menus and text of each page should be larger and there should be breaks in between large blocks of text. This will help to reduce strain on the eyes of a job-hunter. Photos and videos which display the USPTO's buildings and show the diversity of the work force should also be integrated throughout the web site.

The first page of the web site should contain a short message about the important implications a Patent Examiner has for the progression of science and technology, society and the economy. Also, this page should include a link to the video entitled "What did you do at your job today", which is currently on the front page of the uspto.gov page, and a podcast, emphasizing the fast paced and exciting nature of the work. Menu buttons on the main page would include: About the USPTO, Career in Patent Examination, Employee Benefits, Work/Life Balance, Campus Events Schedule, Contact Us, and Comments. Within these main pages, the Training Academy and nature of work at the USPTO should be stressed.

For the USPTO's recruitment strategy, the team made suggestions regarding the universities and radio stations that the USPTO should target, career fairs, employee referrals, USPTO scholarship, social networks, student loan reimbursement, virtual job fairs, and web cam interviews. The team also looked to improve USPTO outreach methods by making recommendations for a co-op program, IP seminars for university professors, information sessions, and on-campus club presentations.

In order to hire 1,200 Patent Examiners per year and help thwart the growth of the current backlog, the team examined the current recruitment methods used by the USPTO and provided recommendations for the overall approach to attract young engineers and

scientists. These recommendations should help to not only hire more applicants, but reduce the number of unqualified applications received by the office. With these suggestions for a college recruitment site, the USPTO can successfully recruit recent graduates.

Table of Contents

Contents	Page #
Abstract	1
Executive Summary	2
Table of Authorship	10
List of Figures	13
List of Tables	14
Acknowledgements	15
Introduction	16
Literature Review (Intro)	19
1. Recruitment Tools in General	19
1.1 Newspaper Advertisements	19
1.2 Radio Advertisements	20
1.3 Employee Referrals	21
1.4 Headhunting	22
1.5 Placement Offices and Career Fairs	23
1.6 Career Sites (Internet)	25
1.7 Summary of Recruitment Techniques	26
2. Attracting Job-Hunters to the Web Site	27
3. Career Site Content	29
4. Usability	33
5. Aesthetics and design	34
6. Perception of Company Image	35
7. Retention	40
Methodology (Intro)	42
1. Interviews	44
1.1 The contact person at the USPTO	45
1.2 Interviews with experienced Patent Examiners	46
1.3 Human Resource (HR) Interviews	47
1.4 Supervisory Patent Examiner (SPE) Interviews	49
1.5 Web Developer Interviews	50
1.6 USPTO Interviewees	51
1.7 USPTO Union Officials	52
2. Questionnaire for WPI Seniors	53
3. Focus Groups with Newly Hired Patent Examiners	53
4. Archive and Database Research and Collection	55
5. Evaluation of Career Sites	56
6. Questionnaire with Future USPTO Employee	58
7. Discussion with TMP Worldwide	58

Results and Analysis	60
1. Recruiting	60
1.1 Job-Searcher Behavior	61
1.2 Why do People Apply for a Patent Examiner Position?	63
1.3 USPTO Recruitment Methods	64
1.4 Effectiveness of USPTO Recruiting at Career Fairs	67
1.5 The Hiring Process	69
2. The Patent Examiner Job	70
2.1 The Patent Training Academy	71
2.2. The Patent Examination Process	72
2.3. Production	72
2.4 The Career Path	74
2.5 Skills and Traits of an Examiner	76
3. Retention Rates	78
3.1 Job loyalty	78
3.2 Retention at the USPTO	79
3.2.1 Nature of the Work	80
3.2.2 Personal Circumstances	82
3.2.3 Work/Life Balance	83
3.2.4 Management	83
3.2.5 Work Culture and Environment	84
4. Recommendations for the Web Site	84
4.1 Content and Aesthetics	85
4.2 Usability	89
5 Outreach Methods	89
5.1 On-Campus Presence	90
5.1.1 Career Fairs	91
5.1.2 College Radio Stations	91
5.3 Co-op Program	92
5.4 Internet Recruitment	93
5.5 Universities	95
6. The Advantages of Working for the USPTO	98
6.1 Benefits of Working as a Patent Examiner at the USPTO	98
6.1.1 Federal Agency Benefits	98
6.1.2 USPTO-Specific Benefits	100
6.2 USPTO Culture	104
6.3 Living in D.C.	105

Recommendations	106
1 College Recruitment Web Site	106
1.1 Search Engine Optimization	106
1.2 Aesthetics	106
1.3 Usability	107
1.4 Content	108
1.4.1 College Recruiting Home	108
1.4.2 About Us	109
1.4.3 Career in Patent Examination	109
1.4.4 Employee Benefits	112
1.4.5 USPTO Environment	114
1.4.6 Campus Events Schedule	115
1.4.7 Contact Us	115
1.4.8 Comments	115
1.4.9 Features from Fortune 500 Companies' Sites	116
2. USPTO Recruitment Strategy	116
2.1 Targeted Universities	116
2.2 Career Fairs	118
2.3 Employee Referrals	118
2.4 Radio	119
2.5 USPTO Scholarship	119
2.6 Social Networks	120
2.7 Student Loan Reimbursement	120
2.8 Virtual Job Fairs and Webcam Interviews	121
3. Outreach Suggestions	121
3.1 Co-op Program	121
3.2 Patent Course	123
3.3 IP Seminar for University Professors	123
3.4 Information Sessions	124
3.5 On-Campus Club Presentation	124
4. Retention-Tracking Patent Examiner Classes	125
Conclusion	126
Appendix 1: List of References	128
Appendix 2: Table of Authorship	135
Appendix 3: Production Formulas	136
Appendix 4: Washington, D.C. Information	138
Appendix 5: Fortune 500 Company Web Site Analysis	141
Appendix 6: Patent Examiner Testimonials	143

Table of Authorship

Section	Main Author(s)	Main Editor(s)
Abstract	Connor & Elaina	Annemarie
Acknowledgments	Connor	Elaina
Executive Summary	Elaina	Connor
Introduction	Elaina & Annemarie	Connor
Literature Review (Intro)	Annemarie	Elaina & Connor
1. Recruitment Tools in General	Connor	Elaina, Annemarie
1.1 Newspaper Advertisements	Connor	Elaina & Annemarie
1.2 Radio Advertisements	Connor	Elaina & Annemarie
1.3 Employee Referrals	Connor	Elaina & Annemarie
1.4 Headhunting	Connor	Elaina & Annemarie
1.5 Placement Offices and Career Fairs	Connor	Elaina & Annemarie
1.6 Career Sites (Internet)	Connor	Elaina & Annemarie
1.7 Summary of Recruitment Techniques	Connor	Elaina & Annemarie
2. Attracting Job-Hunters to the Web Site	Annemarie	Elaina & Connor
3. Career Site Content	Annemarie	Elaina & Connor
4. Usability	Annemarie	Elaina & Connor
5. Aesthetics and design	Annemarie	Elaina & Connor
6. Perception of Company Image	Elaina	Connor & Annemarie
7. Retention	Connor	Elaina & Annemarie
Methodology (Intro)	Connor & Annemarie	Elaina
1. Interviews	Connor	Elaina & Annemarie
1.1 The contact person at the USPTO	Connor	Elaina & Annemarie
1.2 Interviews with experienced Patent Examiners	Connor	Elaina & Annemarie
1.3 Human Resource (HR) Interviews	Connor	Elaina & Annemarie
1.4 Supervisory Patent Examiner (SPE) Interviews	Connor	Elaina & Annemarie
1.5 Web Developer Interviews	Connor	Elaina & Annemarie
1.6 USPTO Interviewees	Connor	Elaina & Annemarie
1.7 USPTO Union Officials	Connor	Elaina & Annemarie
2. Questionnaire for WPI Seniors	Annemarie	Elaina & Connor
3. Focus Groups with Newly Hired Patent Examiners	Elaina	Connor & Annemarie
4. Archive and Database Research and Collection	Elaina	Connor & Annemarie
5. Evaluation of Career Sites	Elaina	Connor & Annemarie
6. Questionnaire with Future USPTO Employee	Annemarie	Elaina & Connor
7. Discussion with TMP Worldwide	Connor	Elaina & Annemarie

Results and Analysis (Intro)	Connor & Annemarie	Elaina
1. Recruiting	Annemarie	Elaina & Connor
1.1 Job-Searcher Behavior	Annemarie & Elaina	Connor
1.2 Why do People Apply for the Job as a Patent Examiner?	Annemarie	Elaina & Connor
1.3 USPTO Recruitment Methods	Connor	Elaina & Annemarie
1.4 Effectiveness of USPTO Recruiting at Career Fairs	Annemarie & Elaina	Connor
1.5 The Hiring Process	Annemarie	Elaina & Connor
2. The Patent Examiner Job	Connor & Annemarie	Elaina
2.1 The Patent Training Academy	Connor	Elaina & Annemarie
2.2. The Patent Examination Process	Connor & Annemarie	Elaina
2.3. Production	Connor	Elaina & Annemarie
2.4 The Career Path	Connor	Elaina & Annemarie
2.5 Skills and Traits of an Examiner	Connor	Elaina & Annemarie
3. Retention Rates	Elaina	Connor & Annemarie
3.1 Job loyalty	Elaina	Connor & Annemarie
3.2 Retention at the USPTO	Elaina	Connor & Annemarie
3.2.1 Nature of the Work	Elaina	Connor & Annemarie
3.2.2 Personal Circumstances	Elaina	Connor & Annemarie
3.2.3 Work/Life Balance	Elaina	Connor & Annemarie
3.2.4 Management	Elaina	Connor & Annemarie
3.2.5 Work Culture and Environment	Elaina	Connor & Annemarie
4. Recommendations for the Web Site	Annemarie	Elaina & Connor
4.1 Content and Aesthetics	Annemarie	Elaina & Connor
4.2 Usability	Annemarie	Elaina & Connor
5 Outreach Methods	Elaina	Connor & Annemarie
5.1 On-Campus Presence	Elaina	Connor & Annemarie
5.1.1 Career Fairs	Elaina	Connor & Annemarie
5.1.2 College Radio Stations	Elaina	Connor & Annemarie
5.3 Co-op Program	Elaina	Connor & Annemarie
5.4 Internet Recruitment	Elaina	Connor & Annemarie
5.5 Universities	Elaina	Connor & Annemarie
6. The Advantages of Working for the USPTO	Connor	Elaina & Annemarie
6.1 Benefits of Working as a Patent Examiner at the USPTO	Connor	Elaina & Annemarie
6.1.1 Federal Agency Benefits	Connor	Elaina & Annemarie
6.1.2 USPTO-Specific Benefits	Connor	Elaina & Annemarie
6.2 USPTO Culture	Connor	Elaina & Annemarie
6.3 Living in D.C.	Connor	Elaina & Annemarie

Recommendations (Intro)	All three	
1 College Recruitment Web Site	Annemarie	Elaina & Connor
1.1 Aesthetics	Annemarie	Elaina & Connor
1.2 Usability	Annemarie	Elaina & Connor
1.3 Content	Connor	Elaina & Annemarie
1.3.1 College Recruiting Home	Connor	Elaina & Annemarie
1.3.2 About Us	Connor	Elaina & Annemarie
1.3.3 Career in Patent Examination	Connor	Elaina & Annemarie
1.3.4 Employee Benefits	Connor	Elaina & Annemarie
1.3.5 Work/Life Balance	Connor	Elaina & Annemarie
1.3.6 Campus Events Schedule	Annemarie	Elaina & Connor
1.3.7 Contact Us	Annemarie	Elaina & Connor
1.3.8 Comments	Annemarie	Elaina & Connor
2. USPTO Recruitment Strategy	Elaina	Connor & Annemarie
2.1 Targeted Universities	Elaina	Connor & Annemarie
2.2 Career Fairs	Elaina	Connor & Annemarie
2.3 Employee Referrals	Elaina	Connor & Annemarie
2.4 Radio	Elaina	Connor & Annemarie
2.5 USPTO Scholarship	Elaina	Connor & Annemarie
2.6 Social Networks	Elaina	Connor & Annemarie
2.7 Student Loan Reimbursement	Elaina	Connor & Annemarie
2.8 Virtual Job Fairs and Webcam Interviews	Annemarie	Connor & Elaina
3. Outreach Suggestions	Elaina	Connor & Annemarie
3.1 Co-op Program	Elaina	Connor & Annemarie
3.2 Patent Course	Elaina	Connor & Annemarie
3.3 IP Seminar for University Professors	Elaina	Connor & Annemarie
3.4 Information Sessions	Elaina	Connor & Annemarie
3.5 On-Campus Club Presentations	Elaina	Connor & Annemarie
4. Retention-Tracking Patent Examiner Classes	Annemarie	Elaina & Connor
Conclusion	Connor & Annemarie	Elaina
Appendix 1: List of References	All three	
Appendix 2: Production Formulas	Connor	Elaina & Annemarie
Appendix 3:		
Appendix 4: Washington, D.C. Information	Connor	Elaina & Annemarie
Appendix 5: Fortune 500 Company Web Site Analysis	Annemarie	Elaina & Connor

List of Figures

Figure 1: Results WPI Seniors Survey	61
Figure 2: Results WPI Seniors Survey	62
Figure 3: Results WPI Seniors Survey	62

List of Tables

Table 1: Recruitment Tools	27
Table 2: Results of WPI Seniors Survey	63
Table 3: 2006 Total Hires per University	66
Table 4: Reasons for Leaving	80
Table 5: Results of WPI Seniors Survey	86
Table 6: Results of WPI Seniors Survey	87
Table 7: Referred from Other Sites	88
Table 8: Top Target Universities for Recruitment	97, 117
Table 9: Special Salary Rate Table	100
Table 10: Recruitment Incentive Determination	102

Acknowledgements

The team received help and guidance from numerous sources during the course of the project. These individuals were knowledgeable sources who the team looked to for information, advice and support. A special thanks to Dominic Golding for guiding the team through the fundamentals of social science research and advising the project during the beginning weeks of research. Also, the team would like to thank the advisors, Professors Holly Ault and James Hanlan, for pushing the team to succeed throughout the course of the project. From the USPTO, the team would especially like to thank Jim Dwyer, LaRita Jones, Mindy Fleisher, Ayaz Sheikh, Scott Nier, and Viola Barnes for all of their help and support during the team's seven week stay at the office.

Again, we would like to acknowledge all those who contributed to the research and execution of our project. Special thanks to:

Amy Shevlin
Brianne O'Neill
Cathleen Hutchins
Cheryl Tyler
Christian LaForgia
Eric Hug
Heidi Bashaw
Jeff Pelligrino
Jennifer Ganas
Jesse Perry
Lisa Caputo
Lynn Field
Marc Norman
Michael Lapage
Michele Jacobson

Nick Galotti
Pat Perillo
Randy Meyers
Robert Budens
Robert Kim
Robert Norton
Sally Phelps
Sarah Simpson
Shaun Campbell
Tariq Hafiz
TMP
Veichung Liang
Viola Barnes
WPI Seniors Class of 2008

Introduction

The United States Patent and Trademark Office (USPTO), under the Department of Commerce, is the sole federal agency in the U.S. which issues patents and trademarks. It is located in Alexandria, Virginia. The USPTO was established to “promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries” based on article 1, Section 8, Clause 8 of the United States Constitution. The USPTO’s mission is to promote “innovation and competitiveness.” The Office achieves this by carefully reviewing all U.S. patent and trademark applications, and providing information regarding patents and trademarks to the general public. These patent and trademark applications are reviewed by Examiners to see if they comply with the laws and regulations and, accordingly, applications are rejected or granted.

In the year 2005, authors and inventors filed for a total of 417,508 patent applications, an 8% increase from the year before (“Mission and Organization,” 2006). The USPTO granted patents to 157, 117 of the applications (USPTO Strategic Plan, 2007). Authors, scientists, and inventors from the entire world file patent applications with the USPTO, in order to gain exclusive rights for their original work, discovery or innovation. Patents provide inventors and businesses security and income for up to twenty years. Shapiro and Hassett estimated that intellectual property produced in the U.S. in 2005 alone was worth between \$5 trillion and \$5.5 trillion (Shapiro & Hassett, 2005). Forty percent of the growth realized by private industry and 60% of growth of export is due to intellectual property industries (Siwek, 2005). Furthermore, the number of patent applications filed annually has increased; showing current awareness of a patent’s potential for strengthening market positions. Patents drive competitiveness and innovation which in turn, helps to fuel the economy.

Ideally, the USPTO would conduct a high quality review of all applications in a timely fashion. In reality, the backlog of applications for review is growing, even with 6,025 Patent Examiners currently employed. Through the year 2007, the backlog has accumulated to approximately 750,000 applications, which may increase to 1.4 million patent applications by 2012 (USPTO Strategic Plan, 2007). Currently, it takes an average of 31 months to review an application and that period is expected to increase to 33.8 months by 2011 (The Patent Prospector, 2006). In addition, due to the amount of work,

Examiners are accused of issuing poor quality patents (Hedlund, 2007). This in turn can lead to increased litigation. One solution offered by the USPTO is an accelerated examination procedure that takes only 12 months. Unfortunately, few applications meet the requirements to qualify for this expedited treatment (Jaeckle, Fleischmann & Mugel, LLP, 2006).

In an effort to deal with the increasing backlog of patent applications, the USPTO is looking to hire 1,200 engineers and scientists per year for the next four to five years. One of the problems with hiring Patent Examiners is that the job is unique. There is no other organization that does the same work and therefore the USPTO can't recruit people from a similar organization with the specific expertise needed to examine patents. Likewise, there are no courses offered at schools teaching the patent examination process and the skills needed. Instead, the USPTO has the task of training each new Patent Examiner for the position. The eight month-long training program ensures that each Patent Examiner knows the basics of the patent prosecution process. Thereafter it is up to the new Examiners to learn as they go while the Supervisory Patent Examiner (SPE) serves as their mentor. This means that the USPTO needs to develop a strong focus on retention of Examiners, because retraining new employees is costly; about \$100,000 per person per year. Losing experienced Examiners hurts the USPTO productivity, because they perform at much higher production than new hires. Therefore, the USPTO's goal is to attract the most suitable and well-qualified applicants from the pool of recent graduates in science and engineering who will stay at the USPTO for the duration of a career.

Recruitment strategies have changed dramatically in recent years with increasing emphasis on the use of the Internet. Consequently, the Worcester Polytechnic Institute project team (the team) worked closely with representatives at the USPTO and explored the Patent Examiner job to develop content and design recommendations for a career site geared towards engineering and science college students.

In order to achieve this goal the team:

- Conducted a review of the literature on recruitment tools and methods in order to identify the most useful and effective methods of hiring, that will be the most appropriate in the context of the USPTO's circumstances;

- Reviewed the means Human Resource (HR) employees at WPI, USPTO, Worcester companies, and other similar government agencies use in order to hire scientists and engineers;
- Interviewed Patent Examiners to create work descriptions to include on the web site and help formulate the “ideal Patent Examiner” to develop a compatibility test online for prospective employees;
- Interviewed web developers and a web developing company to discuss what elements of a web site are effective in recruiting engineering college students;
- Interviewed a personnel psychologist with regard to screening tests, reasons for leaving the USPTO, and realistic job previews for on the web site;
- Conducted a focus group with new Patent Examiners to discover what inspired or motivated them to join the Patent Office, the important aspects of their work, their opinions of the USPTO’s current recruitment plan, and suggestions for improving the hiring process;
- Distributed a questionnaire to WPI’s senior students to determine how they conducted job searches, the tools used, and the information they found important when making career decisions;
- Evaluated the USPTO’s career site according to the identified factors that make a web site an effective recruiting tool and compare the site to other Fortune 500 companies’ web sites.

Through the execution of these tasks, the team collected the data and acquired the knowledge needed to develop an effective recruitment plan that will achieve the USPTO’s goal of hiring 1,200 new patent Examiners for the next four to five years.

Literature Review

Employers use many different techniques and strategies to recruit suitable candidates for professional positions. In this chapter the team examined the relative merits of these different techniques, with a particular emphasis on the use of web-based approaches. It is generally assumed that web-based recruiting is the best approach and the team reviewed the evidence regarding its relative effectiveness. The web recruiting processes are divided into four sections and each is discussed separately below: how to direct job seekers to the web site; what information should be provided there; how to make the site attractive and user-friendly; and how to create a positive agency image. The team also examined the challenge of retaining employees and what it takes to keep qualified workers happy within a company or government agency.

1. Recruitment Tools in General

There are many methods an employer can use to recruit new employees, ranging from traditional newspaper ads to the use of web-based career sites. With the developments in technology, searching for jobs has become increasingly easy. Companies have the option of using several different tools for recruitment, and should explore available options. There are advantages and disadvantages to each recruitment technique. In order to help the USPTO develop a college recruitment website that focuses on college students, the team explored the advantages and disadvantages of a range of available recruitment tools. Using these alternative methods, the team determined not only what aspects of each tool could be useful for a website, but also other areas that the USPTO could consider in revising their approach to recruitment.

1.1 Newspaper Advertisements

John McCarter, the author of a book concerning recruitment strategies, says that, “The Sunday classifieds are the definitive traditional method to advertise for employees” (McCarter, 2000). Searching for jobs using the classified section of the newspaper is easy and convenient, because it can be delivered or picked up at any local store. These job advertisements are generally grouped together in categories like “technical” or

“management,” and direct readers to the job description they are interested in (McCarter, 2000). Unfortunately, there are several disadvantages to the use of newspaper advertisements. One major disadvantage is cost. For example, in a study concerning the recruitment of elderly people for a community service project, Clemson et al. found that only 12 people were recruited from posting nine paid advertisements, and the overall cost was \$3,083, or almost \$343 per ad (Clemson et al., 2007). It becomes evident that other forms of advertising are much more cost-effective. Another problem is that many unqualified candidates submit resumes, which forces a company to take time sorting through large numbers of resumes (McCarter, 2000). Also, local newspapers only cover small geographical areas and companies may want to reach a broader geographical range of job seekers. Alternatively, employers place ads in large scale outlets, such as the LA Times and USA Today, but the costs and complexity of recruiting only increases. For example, full-page advertisements in black and white print will cost a company \$70,000 and \$100,000 in the LA Times and Washington Post newspapers, respectively (For Entrepreneurs, 2007). Also, these outlets put a company at a high risk of receiving resumes from unqualified candidates. Given the popularity of one of these papers, the job description is visible to a very large pool of readers. However, employers still use newspapers as a vehicle for job advertisement. Job seekers have used the newspaper to search for jobs for many years, and it continues to be a popular mode of recruitment even in today’s electronic age (Gautam, 2005).

1.2 Radio Advertisements

Advertising through radio for a Patent Examiner position could prove to be especially beneficial for the USPTO. Within the last few years, organizations with a high demand in small geographical areas have used commercials; generally about 30 seconds in length, to introduce the organization, describe the job being offered and give contact information to find out more about the position (Gautam, 2005). Due to the number of commercials that air everyday, the radio is a useful tool in recruiting. Millions of people throughout the country tune into the radio throughout the day, particularly during morning and evening commutes. Advertisements with visuals, such as those seen on television, tend to be expensive, but radio ads are actually recommended for cost-efficient

means of recruiting. Peter A. Burkhard, a Creative Director from “The Burkhard Agency” in Orlando, FL, specializes in accelerating sales. He says that it is easy to reach a thousand listeners via radio with a single commercial that costs as little as \$5.25 per time it is aired (Burkhard Works, 2005). The downside of radio ads is that they do not target a specific audience. The contracts with radio stations can cover thousands of plays for an ad, depending on the fee that a company is willing to pay. Examples of other factors that play into the expense of the commercial are length and how far in advance a company purchases a spot. If a company wants to air an advertisement at a specific time, the price of airtime rises if it is a much-desired time. For example, a commercial that airs during rush hour will cost a company more than the same commercial at ten o’clock in the morning. Also, as with local television stations and newspapers, each radio station only covers a small geographic area, allowing only a small population to hear the commercials. One solution to this problem is to take out advertisements on various national broadcasts or large city stations, which reach much larger audiences, but cost a great deal more than local radio station ads. One suggestion for targeting the right audience is to buy airtime at campus radio stations at certain universities. Many schools nationwide have radio stations, which focus mainly on the students at that campus. For example, MIT runs a college station in Cambridge, MA that could be targeted by an organization (Colleges, 2007).

1.3 Employee Referrals

An employee referral system is an inexpensive and simple tool used by many employers. Employees recommend their company to their friends and family, whom they believe provide a good fit with the employer’s needs. Employees are often compensated when a referral is hired (Breaugh et al., 2003). McCarter states that, throughout their careers, most employees have met other qualified professionals who would be excellent employees (McCarter, 2000). He also says that employees benefit from attracting the best individuals, because recruiting poorly qualified individuals might leave the employee with a bad reputation. In addition, people tend to recommend candidates they know personally and would like to work with creating a stimulating work environment.

A good way to set up a referral system is to first inform everyone in the company that they should join in the effort to hire their peers and then initiate a system for employee benefits and awards if the referrals are hired. This system is cost efficient, because a company's current employee is the liaison between the company and the potential worker. In fact, the usual cost-per-hire of employees falls between \$7,000 and \$12,000 using alternative methods, so referrals are a highly cost effective way to hire, accounting for 30-40% of hires in many top organizations (McCarter, 2000). Employee bonuses are the major cost of a referral system. Other smaller costs are involved, such as cost of design and print for flyers, and other ways that the company encourages their employees to recruit. In fact, Sovereign Bank found that employee referrals are their best means of recruitment for new hires, as the highest percentage of their employees were obtained through referrals (Kerber, 2007).

One study related employee referrals and other recruitment techniques to how effective an employee becomes. The study reported on 1,337 job hunters that applied for an IT specialist (entry-level) job at a company in the Midwest. The researchers hypothesized that those candidates who were sought out through employee referrals would pursue job offers more than applicants through newspaper ads and college placement offices (Breugh et al., 2003). There were 628 applicants referred by employees and 258 applicants through newspapers and college placements. The study showed that 70 referred applicants were offered jobs, while only one job was offered to someone from a college placement office and three through newspaper ads (Breugh et al., 2003). This shows the effectiveness of employee referrals. After all, these candidates were chosen by friends who predicted their potential compatibility with the company.

1.4 Headhunting

Headhunting has been described as a useful approach that has been used for decades to find professional candidates for a position (Breugh et al., 2003). Typically, a consultant is hired by an organization in order to "headhunt," or seek out employees, via e-mail, telephone, or another form of communication. Hiring managers often prefer using headhunters to their HR staff because headhunters generally report straight to the managers. In addition, headhunters conceal the tactful moves of managers who try to

find employees from competing companies (Finlay and Coverdill, 1999). Headhunters are usually helpful because they tend to come from specialized recruitment firms that know how to seek out top candidates. They use various search tactics to locate “hidden” candidates (Finlay and Coverdill, 1999). By this, Finlay and Coverdill mean those candidates with proven success, usually found at other businesses or in proven careers, as opposed to new applicants with no experience. Hiring a headhunter can be quite costly. McCarter says that a headhunter generally charges a company 25-35 percent of their candidate’s first year salary (Finlay and Coverdill, 1999). Consequently, headhunters are generally hired for a small number of extremely specialized positions within a company. For this reason, headhunters may not be very helpful to the USPTO, as this organization has set a goal of 1,200 new hires in the next year.

1.5 Placement Offices and Career Fairs

Businesses that need science and engineering employees can benefit from contacting universities about their placement offices and career fairs. Jacquelyn Lynn (1997), who has conducted research pertaining to non-obvious ways to recruit qualified professionals, suggests contacting a school’s placement office, whether it is a college or a high school, in order to help with a company’s recruitment plan. Placement offices at universities or Career Development Centers (CDC) are on-campus agencies that assist students in finding jobs by setting up connections between employers and students. For example, Rensselaer Polytechnic Institute (RPI) offers help to students in the form of personal career counseling within the CDC. They also set up workshops and information sessions on campus that attract students and introduce them to possible employers throughout the nation (RPI CDC, 2007). In fact, research has been done showing how effective it is for a company to give an information session on college campuses, in order to increase name recognition with college students. Stephen Barr (2007) from the Washington Post writes about a study done by the Partnership for Public Service, in which a 2005 survey was sent to five universities; Clark Atlanta, George Washington, Louisiana State, Ohio State, and Stanford. The Partnership tries to solve the federal Government’s problems with hiring employees. The survey found that information sessions in college classrooms and also student-alumni interactions on campus were

effective in making students act on potential careers in the government. The idea of informative classes that companies can deliver to college students can be very helpful for the students to understand what a company does and what the nature of the work is at that employer.

Career fairs are extremely popular among schools throughout the nation. For example, BAE Systems is a worldwide defense company that recruits technically-literate job candidates, and they attended over 40 college career fairs nationwide from September to late October. Through career fairs, a university can introduce its students to dozens of companies at one time. The average career fair consists of these companies arranged in an open space with banners branding their company name. Students walk around, talking to company representatives about job openings that are available, and handing out their resumes. The job fairs speed up the job search process because applicants are able to talk one-on-one with company representatives. Also, if a company appeals to a student early on in his/her sophomore or junior year, the student will keep them in mind when looking for a job later on (Cober et al., 2004). From a student's perspective, these events are a way to positively introduce their job candidacy to corporations.

Another effective tool that the study in Barr's article (2007) revealed was the use of e-mail to reach out to students at various schools. Much less elaborate than an information session, mass e-mail messages can be sent out to inform students that companies are hiring new employees and are accepting applications. They can also give a brief overview of the company and the nature of the work performed there. In the study conducted by the Partnership for Public Service concerning recruitment for the government, the results found that "e-mails about federal opportunities were the most remembered outreach activity" (Barr, 2007). Students use e-mail and, therefore, are bound to come across those messages sent by businesses to their schools. However, the problem that this study found was not so much with persuading students to apply for government jobs, but with the number of students that actually accepted their job offer from the public sector. This shows that there are problems beyond the actual recruiting techniques, which will be examined later.

1.6 Career Sites (Internet)

Career sites are web sites put together by individual companies for recruiting purposes, which not only describe the job opening, but may include information about the company, employee benefits, employee profiles, and other helpful information for job-hunters (Young and Foot, 2005). Companies use career sites give detailed explanations of their organization, giving full job descriptions and presenting the company in the best possible context for a targeted audience. The Internet is starting to tie forms of recruitment together through job search databases and personalized organizational websites. In fact, the HR Focus Hiring Survey from 2004 showed that online recruiting is the second most popular method to find employees, only falling behind print advertisements (Gautam, 2005). Although this statistic may vary with different companies, it is safe to say that recruiting sites are among the most widely used techniques to fill jobs today. Feldman and Klaas (2002), who have conducted studies and analyzed data concerning career sites, say “90% of the Fortune 500 companies use some on-line recruiting and over eighteen million people annually are posting their resumes on Monster.com” (p.175). They also mention that 45 percent of companies polled in one study revealed that 20 percent or more of their job openings were filled using the web. Similarly, Sovereign Bank finds that about 28% of their job openings are filled through one of their three career sites, out of a pool of roughly 2,000 new hires per year (Kerber, 2007). Tom McAuliffe, who is an executive vice president at Sovereign Bank, said that posting job openings on a career site is “the cheapest way to get the message out quickly” (Gautam, 2005, p. 258). Adding new job postings costs little compared to placing them in other media, as Kanak S. Gautam, PhD, MBA points out “...the rate for a long online ad for a month ranges from \$100 to \$350, whereas a similar sized newspaper ad for a single day could cost up to 30 times as much” (p. 258). She also says that Oregon Health and Science University started using the Internet for recruitment and saved an average of \$1,720 per job opening that was filled. This figure is in comparison to methods such as banner advertisements and newspaper ads, which many companies are directing away from due to problems with cost-effectiveness.

With the use of a company’s career site, a student can become familiar enough with the organization to feel comfortable talking about it. The Career Consulting Corner

web site (Career CC, 2007) recommends obtaining background information about the company before an interview. Many studies have been done to demonstrate the importance of researching a company before an interview with them in order to learn about the position and also to understand some of the benefits that they offer. This strategy is helpful to a student because it allows them to consider whether they would be happy with the job, the salaries, and benefits that the company offers. With a little research about the company, the interviewee shows legitimate interest and is more likely to be remembered by a company's recruiter. Although information about an employer can be found through different methods, one easy way is to find a job description on the company's career site. Plus, it never hurts to learn about the benefits that the company offers a candidate before an interview.

The advantages of recruiting sites are ample. A site will reach people all over the world at all times. Convenience and efficiency makes it a desirable recruitment tool. It also helps with the neat organization of resumes and contact information. Therefore, it seems prudent to incorporate e-recruiting as part of an integrated selection strategy. The USPTO's goal of establishing a college recruitment site will force the team to consider the different factors of a site that make it effective, including what students want to view on the web site and information on how they can prepare for a job.

1.7 Summary of Recruitment Techniques

Each of the recruitment methods described previously has its strengths and weaknesses, which are briefly described in the table below (see Table 1).

Table 1: Recruitment Tools

Recruitment Tool	Cost	Ease of Implementation	Focus on Engineers/Scientists	Geographic barriers
Newspaper Advertisements	Medium-High	Very easy	Poor	National papers
Radio Ads	Low	Relatively easy: produce commercial	Poor	Small area
Employee Referrals	Low	Easy	Good	Friends and acquaintances
Headhunting	High	Medium: qualify the person needed	Good	Nation wide
Placement Offices/ Career Fairs	Low-medium (travel)	Medium: travel	Excellent	Travel
Career Sites	Medium	Medium	Good	World wide

Compiled by Connor McGrath, 2007

Of all the different strategies listed above, no single recruitment tool alone is likely to be sufficient to recruit enough quality candidates to fill 1,200 Patent Examiner positions over each of the next five years. Each of the techniques described above has its advantages and disadvantages. The team will develop helpful tips for the current USPTO recruitment strategy, but it is expected that the web-based strategies will become more dominant, as technology continues to expand. In addition, the USPTO has requested that the project team perform research in order to provide suggestions pertaining to the content of a college career site. In the remainder of this chapter, this team will analyze the findings from literature regarding how to attract people to the web site, creating the right content on the site, making the site attractive and user-friendly, and creating a positive company image. There are many different strategies for each. First, the team will discuss how to direct recruits to the USPTO web site.

2. Attracting Job-Hunters to the Web Site

According to one particular source, there are over a billion Internet users in the world today (*Internet World Stats*, 2007). These users have the ability to access more than 40,000 job boards and 2 million company web sites (Foster, 2003). Given this data,

it is important that the USPTO ranks high in job searches conducted by graduating students on the Internet. If a company wants its web site to come up at all in Internet searches, it needs to register the site with one or more search engines (Sullivan, 2004). Paid services will almost certainly generate more traffic to the specific web site than free registrations. To ensure that the web site ranks well for searches conducted by Internet users, it is important to submit certain terms to the search engine that describe the web site. This is called search engine optimization. The terms should accurately describe the content on the site and it is helpful to add variations of the terms themselves in the content. Search engines have lists that show the most popular searches, which may help determine what words to submit. The search engines base their ranking of web sites on where and how often key words appear on a web site. Therefore, it is important to have the key words appear in the title and near the title, because these are the sections search engines search primarily. In addition, it is helpful to have other sites link to the web site. Crawler-based search engines like Google follow links or meta tags to sites that are then added to their databases. For an extra fee, a company has the option to advertise on a search engine's site. For example, Google sells sponsored listings that appear at the top of the search results page. Yahoo offers sites to pay more for its services in order to rank higher than other sites that use the same words. Each search engine is different but in general the above-mentioned guidelines will increase a web site's chances of showing up early when a search is done (Sullivan, 2004).

Research indicates that name recognition is an important influence on the number of people attracted to a particular web site. Once the job hunter has found the web site there should be a visible link on the home page to jump to the career site. Another method may be to post certain "hot jobs" directly on the home page or on appropriate interior pages that will catch the visitor's eye (Foster, 2003). According to Foster (2003), the main reason people go to a company's web site is to gain information about that company. The second most common reason is to search for jobs. Therefore, it makes sense to allow visitors to link to a recruitment site from the home page. Visitors have different reasons for coming to a company or organization's web site and each one should be able to quickly find the particular information within the site that they are looking for. Adding proper headings and menus would facilitate this process.

In order to reach a large audience, companies can put their career sites on search engines and job banks. Sites such as Monster.com, Career Magazine, Job Center, Career Builder, Career Mosaic, and Guru.com are but a few places that job-hunters search in order to post their resumes and find companies that have open positions (Marschall, 2002). On the other hand, such wide exposure may increase the number of unqualified applicants and flood the HR department.

3. Career Site Content

Generally, a web site provides a prospective hire with information regarding job positions, what life at the particular business is like, and how to apply. These are the so-called “core aspects” of the content. There are also more peripheral features like color, sound, font, etc., but these pertain to aesthetics and will be discussed below. According to MacKenzie and Spring (1992), who studied how motivation influences central and peripheral processing, central cues motivate more than peripheral cues. It was then postulated by Maurer and Liu (2007) that highly motivated job seekers are affected by core aspects whereas people with low search motivation are persuaded more by the peripheral features. This suggests that a company looking to attract people who are serious about finding a job need to emphasize the core aspects of the job (Maurer and Liu, 2007). In addition, making decisions based on central aspects increases confidence and strengthens the applicant’s attitude towards a job (Wood, 2000). The amount of content provided should be just enough to inform the job seeker and not be too overwhelming. It has been shown that the highly motivated job searcher appreciates fairly extensive and detailed job descriptions (Maurer and Liu, 2007).

In order to address this key concept, the idea of a Realistic Job Preview (RJP) is becoming increasingly popular. RJP’s are elaborate descriptions of the nature of work within a certain company that aim at narrowing the gap between an employee’s expectations of a job and the reality of the actual work. This useful tool is different from a marketing approach to describe the position because a marketing piece will focus mainly on the perks and other positive aspects of the job like the enjoyment that can be derived from working for an organization. On the other hand, an RJP gives a job hunter detailed information about the job, including the responsibilities, work environment,

management, and company culture (Lifter, 2005). Aon Consulting, which describes itself as is a talent solutions consulting firm, found that job-seekers come into the recruitment process uninformed and therefore should see an RJP of a current employee in the type of position that the candidate would obtain. That way, the applicants can view the realistic aspects of the job from a peer's perspective and self-assess whether or not to continue in the selection process for that position. These RJP's generally involve print descriptions of the work conducted, but multimedia can also be an effective tool in stimulating interest in the job. Mark Lifter (2005), who has over 25 years of experience in human resources and has studied how to avoid poor hiring matches, says that "candidates learn best about the job through multiple senses," which means that the internet is a useful place to hold RJP's that involve pictures and video clips to attract job-seekers. In addition, a web site allows the candidate to examine certain pages more than once to learn about a job, and also lets them control the search so that they can research the aspects of the job they are interested in learning about. Feedback to Aon Consulting regarding the RJP has described the tool as "'rigorous', 'fair' and 'highly job-relevant'" (Lifter, 2005).

Compensation is one of the key determinants in the decision making process for a job seeker (Cober et al., 2004). Unfortunately, the private sector pays a lot more than a government agency and thus the agency needs to provide other incentives to employees. Examples are flexible hours, telecommuting, travel expense reimbursement, less formal dress code, and incentives to stay on another year. Some people may be attracted by the fact that working for the government means working for the greater good. The Partnership for Public Service is an organization that "conducts outreach to inspire and educate young people and other key pools of talent needed by government" (Partnership for Public Service, 2007). In addition, it will work with government agencies to help recruit new employees. Hopefully, these efforts will increase interest in government jobs.

Another feature a career site can offer is interactivity with its visitors. Marketing and management research suggest that the "interactivity is a specific and important element of e-recruiting success" (Maurer and Liu, 2007, p. 311). Examples of interactive tools are the ability to apply online, take prescreening tests, and getting answers to questions in a live forum. The breadth and depth of sensory information such as virtual

tours of the office are also found to be highly persuasive (Nelson, 1981). The reason could be that people who look for jobs need to be able to experience the job before really being able to decide whether it is something they would like to do. In addition, the visual images may increase the person's ability to recall important information regarding the job (Breaugh, 1992).

The element of personal feedback in the form of a compatibility test has proven to attract applicants, because feedback supplies reinforcement that a prospective employee would fit into the environment of a certain company. When a website provides a resource to determine whether an applicant is compatible with an organization, the applicant tends to take the feedback into consideration (Lifter, 2005). This kind of feedback is given by online tests, which "provide applicants with (often free) personal assessment information, leading to increased self-awareness of their knowledge, skills, personality traits, preferences, and interests" (Hu, Su, and Chen, 2007). Positive feedback would indicate that a candidate has a good chance of successfully filling a position. As a result, individuals are more attracted to the job opportunity and, therefore, are more likely to apply (Hu, Su, and Chen, 2007). The applicant has determined that he or she qualifies and the employer has found a good match. The test also helps to identify those candidates that don't meet minimum qualifications for the job and therefore eliminates some of the unqualified applications that a company may receive otherwise (Lifter, 2005). If the candidate does not fit, he or she will not likely apply, thereby saving the company time and money in recruiting.

Aon Consulting, the same group that stresses Realistic Job Previews, helped with the hiring process of a major U.S. automobile company from 2003 to 2005, and implemented a useful process that was technologically advanced. The process involved online application submission, an RJP, and a prescreening test. As the process was installed, the company reported that their new hiring procedure was a "best-in-class" system for hiring qualified candidates (Lifter, 2005). Although they can be helpful, it is important that the compatibility test is reliable, since it is not desirable to turn away a potentially good candidate. Also, some people may be afraid that any information entered could negatively influence their application process. Therefore, developing a compatibility test needs delicate consideration before implementation.

A career site may also contain a “corporate brand message (Foster, 2003, p. 13).” This is a means to tell interested prospective applicants what the company stands for and what the company has to offer. It can convey features like success, quality and education. Accordingly, the job would offer competitive salaries, interesting work, and training. This, in turn, may attract those people who have similar values and goals and thus provide a better fit (Foster, 2003). It stands to reason that the more specific the “brand message,” the more it attracts those people who believe in the same things.

Promoting diversity may provide another competitive advantage to a company. A study showed that 72% of Fortune 500 companies think it is important to include a section about their commitment to diversity on their career website (Young and Foot, 2005). Diversity on these sites goes beyond just race and gender and includes age and religion. Studies have shown that minority applicants are more attracted to the diversity message than are Caucasian job seekers (Rubaii-Barrett and Recasino Wise, 2007). The more diversity is emphasized on the career site, the wider and more varied the pool of applicants reached will be. In addition, it provides for a more interesting workforce when people with different backgrounds and of different age groups work together.

It is important to support the diversity statement with specific examples. For example, clearly state values and norms and document endeavors in diverse composition of the workforce. Aside from diversity statements, visual images may help create the perception that a company is racially and gender diverse and increase the likelihood of minorities applying (Rubaii-Barrett and Recasino Wise, 2007).

In summary, a career site needs to emphasize the core aspects of the job including a realistic job preview. Unfortunately, salary is a critically important factor in deciding where to work. Government agencies pay less than companies in the private sector. Therefore, efforts are being made to increase interest in working for the government. Furthermore, it is essential to have a degree of interactivity on the web site. A compatibility test is a good example of interactivity and would cut down the number of unqualified applications. Finally, a brand message and a diversity statement are two other critical elements to include on a career site.

4. Usability

Usability is defined as “the perceived ease of acquiring information and using a web site to meet desired objectives” (Cober et al., 2004, p. 631). In two studies conducted by Cober et al. (2003) it was proven that improved usability positively affects job-hunting experiences. The studies involved over 200 students who were asked to view certain companies’ career sites and answer several questions afterwards. The hypothesis tested was that aesthetics and usability affect organizational attraction beyond the attraction caused by the content of the site. The results showed that not only does ease of navigation positively influence the attraction to the company but it also increases the chance of the user telling friends about the site (Cober et al., 2003). According to Brown (2004), however, 75% of people looking for a job on the Internet find the sites too complicated to use. In fact, 20% of job seekers said that they did not apply for the job because the web site was poorly designed (Maurer and Liu, 2007). This suggests that it is worthwhile to invest time and thought into the usability of the career site.

Cober et al. identified several features that influence usability. For example, the organizational structure of a web site must be arranged in such a way that it is easy to logically move from one page to another. Nielsen (2001) suggests visitors to a site should be able to know at anytime where they are and where they can go. Secondly, usability is influenced by the presence of a way to get a response from someone at the company. Furthermore, the buttons and other navigational tools should be intuitive to use and the information a job seeker wants must be readily available. Finally, the web site should load quickly in order to be user-friendly.

The federal Government specifically has experienced the negative effects resulting from poorly designed career sites that require too much manual work to submit an application. The same study mentioned above conducted by the Partnership for Public Service, in which five universities helped test a multi-pronged outreach program, showed that convincing students to accept government jobs was a problem. From the five schools, 21% of the students who participated applied for government jobs. However, only four percent ended up working for the government upon graduation (Barr, 2007). This study showed that the government has a challenge getting those students who applied for jobs to continue with the application process. This could be caused in part by

the private sector responding to applications faster than federal agencies. However, the report put out by the Partnership suggests that complex and monotonous forms that are mandated by the government deter students, especially because complex or lengthy forms “reinforce negative stereotypes about government being overly bureaucratic” (Barr, 2007). Thus, designing a career site that requires too much manual work has a negative effect on job seekers.

5. Aesthetics and design

Zusman and Landis (2002) determined that people rated jobs posted on “higher quality” pages better than on “lower quality” sites. Therefore, a successful web site should not only focus on content and usability, but aesthetics as well. Aesthetics and design can be defined as the features that make a web site attractive, like color, sound, font, photos and layout. Though aesthetics are not as important as the content and usability in terms of effectiveness in recruiting, it does influence a job applicant’s attention and emotional response (Schenkman and Jönsson, 2000). It provides job hunters with vivid experiences they don’t get from traditional recruitment tools and it seems to affect college students’ decision to apply (Peters, 2001). In the last years, companies have made more use of career sites to recruit new employees (Maurer and Liu, 2007).

Cober et al. (2004) conducted a study regarding the aesthetics and usability of a recruitment web site. They found that the presentation of a web site is critical in attracting and maintaining Internet users’ attention. Attraction was defined as the interest in a business as a potential employer, preferences regarding employers and probability of submitting a resume. The most important factor in designing a web site is “unity.” All the independent elements of the site should be visually connected in a meaningful way (Veryzer & Hutchinson, 1990). For example, the repetitive use of shapes, colors, and textures, aligning visuals in a structured way, and grouping items that relate in content enhance the unity of a site (Williams, 2004). Cober et al. mention that using design elements that are relevant to the content on the web site and designing the career site consistent with the broader organizational web site can also achieve unity.

A second important factor in designing an effective career site is contrast. This means that components of the site that are distinct, look distinct (Cober et al., 2004). It applies to everything, including colors and fonts. Williams (2004) suggests that contrast is so important because it is what initially appeals to an Internet user when he or she looks at a site. According to Chen and Wells (1999), web sites are rated higher partly due to use of contrast.

Thirdly, images, sound and animation have proven to be positively correlated to a person's attitude towards the web page (Chen and Wells, 1999). This, in turn, may positively affect a job hunter's initial reaction to an employer (Cober et al., 2004). Usually, the job hunter knows relatively little about the employer (Gatewood et al., 1993) making the first impressions highly relevant to their job-pursuit behavior (Herriot & Rothwell, 1981).

As mentioned above, usability is important. There are several design strategies that make a web site easy to read (Foster, 2003). First of all, a web site should contain enough blank space to keep the user focused. Studies have proven that the eye focuses on the text area while the blank space provides separation and contrast. Too many pictures, videos and sounds distract from the message and may even be perceived as annoying. High graphic content also increases download time and therefore affects the usability of a site. Therefore, a balance should be found between the number of design elements and the ease of use of a site.

6. Perception of Company Image

Job seekers can peruse the web site of the companies or organizations in which they are interested to determine how well they think they may 'fit' based on characteristics of the company and the particular jobs offered. According to Bretz (1993), job seekers look for "organizational characteristics such as strategy, culture, and values" (p. 320) to determine their personal fit. Many times, the company web site is the only representative item of a company to millions of prospective employees. The USPTO is only located in D.C., and thus many applicants are geographically unable to make a personal visit to the office. The web site is the crucial medium between the USPTO and potential employees. Impressions of the job are positively related to the

perceived quality of information gathered (Zusman 2002). Consequently, an applicant's impression of a web site is positively related to the perceived quality of information that is procured.

Corporate image and company employment image play a crucial role in recruiting highly qualified and specialized graduates and professionals (Lemmink, 2003). A potential employee's feelings about, attitude toward, and general understanding and overall image of a company or organization affect the probability of applying, as well as the subsequent acceptance of a hiring offer. Personal experience, interpersonal communication and mass media all play significant roles in the images people associate with various employers. Many variables affect applicants' attitudes toward an organization, and the subjective nature of this relationship is difficult to quantify and study. Although it may be difficult to gauge the magnitude of importance of each factor, it is safe to say that a positive corporate image and company employment image is an important and influential recruiting tool. Companies with perceived positive images have more applicants, a higher percentage of highly qualified applicants, and therefore have access to a larger selection pool, and can hire the potential employees with the best fit (Schenkman, 2000). Therefore, it can be assumed that image perceptions directly relate to potential employees' decisions to apply.

Work is an important part of one's identity. It is a means by which people associate, define and categorize each other. When first meeting a new person, a frequent question is "What do you do?" This information leads us to form first opinions and generalizations about that person. Society places great emphasis on one's profession and place of employment. Based on this, it is crucial for companies to work on their image, in order to attract and retain the best employees.

There are many factors that coalesce to form a company's corporate image. According to Lemmink (2003), corporate image "will be influenced by seven factors: ability to attract, develop and keep talented people; community and environmental responsibility; financial soundness; innovativeness; marketing and communications; quality of management; and quality of products/services" (p. 3). It is important to integrate these factors into various recruiting methods, such as the employer's web site. For the USPTO, these factors could be displayed on the web site through profiles of

successful employees, articles on cutting edge advantages in technology facilitated by patents and trademarks, and charts or statistics showing how patents benefit the country technologically and economically.

An important and key factor, which shapes a company's corporate image, is corporate advertising. According to Collins (2004), who conducted several studies on the effects of corporate advertising on recruitment, marketing, media and advertising affects "organizational recruitment outcomes by increasing job seekers' awareness of an organization as an employer and by creating positive beliefs about the company" (p. 689). A positive corporate image and reputation adds value to a job, outside the typical attributes of work, for example, job content, or pay.

The USPTO's corporate image is also greatly affected by its categorization as a government agency. It is an agency specifically engineered to protect the rights and economic benefit of inventors. USPTO staff use their skills and knowledge in order to benefit the country and serve a larger purpose. According to Phillip E. Crewson (1997) "public-service motivation in the federal sector is positively related to organizational and national commitment" (p. 501). In a recent survey of 10,000 federal employees, Katherine Naff of San Francisco State University found a strong correlation between "public service motivation and federal employees' job satisfaction, performance, intention to remain with the government, and support for the government's reinvention efforts" (1999, p.7). Therefore, the USPTO's categorization as a federal agency positively influences the recruitment of citizens who are driven towards careers in public service.

However, evidence also supports the negative effects on recruitment from the USPTO's classification as a government agency. In 1999, young Americans who were asked to picture themselves in federal organizations saw the career as a "dead-end job, where seniority and not performance rules" (Light, 1999, p. 2). To combat this negative image, the USPTO must emphasize its current career ladder and the ease by which employees may climb, solely based upon their level of hard work and productivity. In a study by Bruce Buchannan of 279 managers from federal employment and industrial employment, the industrial managers had "greater satisfaction and greater commitment" to their job, compared to managers who worked in federal jobs (1974, p. 371). In order to improve the image of a lack of purpose and commitment as a federal employee, the

USPTO must emphasize its role as a driving force in the promotion and progression of national and global technology.

Another type of image, the company employment image, also affects the propensity of a potential employee to apply for a job. The company employment image is a company's attractiveness as an employer. Lemmink (2002) postulates that "advancement opportunities, interesting job/function, international opportunities, organizational culture, pay, and training and educational possibilities" (p. 12) all form the company employment image, which directly influences application intentions. The USPTO offers its employees many of these attractive features. An inclusion of these aspects of employment on the career website will positively affect company employment image, subsequently benefiting recruitment and hiring.

Employers can also form an overall positive image by establishing a sense of familiarity (Backhaus, 2002). Familiarity, access to information, and ease of such access, all positively affect corporate image, and company employment image. A company web site is an easy and effective way to provide a great amount of easy and accessible information. A company web site is not the only way to establish a sense of familiarity, however. Interactions and communication between a company recruiter and a potential employee also establishes an element of familiarity. According to Harris (1987), who conducted a research study on the effect recruiters have on applicants, recruiters have a direct impact on a candidate's perception and reaction towards the recruitment process, the company image, and the intention to accept a job. College students develop positive feelings towards a company or organizations' recruitment process if they have a positive interaction with a recruiter. Personable, informative and competent recruiters have "an impact on the success of a college campus recruitment program" (Harris, 1987, p.17). However, a company career site and company hired recruiters should not be the only modes of communication and outreach. A multi-pronged approach must be employed in order to cover the greatest amount of information, to reach the greatest number of potential employees.

All the modes of recruitment must positively affect the corporate image, and the company employment image, and should cater to the interests of potential employees. Lemmink discussed various key aspects such as advancement opportunities, pay, and

work environment, which recent graduates find important when brainstorming employment opportunities. Employers must carefully take into account these factors, and integrate them into a multi-faceted recruiting approach. The wider the scope of recruitment, the greater the positive corporate image and company employment image, and therefore the greater the number of qualified applicants.

It is also important to understand applicant reactions at a personal, individual level. According to Rynes (1991), applicant reactions are dependent and “related to gender, work experience, GPA and search success” (p. 43). Women are more apt to have a negative reaction to recruitment if the work environment “runs like an old boys club,” or if there are no female employees present in positions of power or authority. Also, applicants with more work experience do not react negatively to prolonged periods of waiting for interviews or callbacks because they are more familiar with the long process. Recent graduates with higher GPA’s are more likely to be optimistic during the recruitment and hiring process because they are more confident and self assured with the abilities and skills that they offer employers (Rynes, 1991). It is important for the USPTO to understand the individuals within the applicant pool, and the various groups or categories into which they may fall. Individual circumstances greatly affect applicant reactions, positively or negatively, ultimately affecting potential employment.

As discussed previously, image, association, perception and comfort through familiarity are key psychological aspects, which affect recruitment. Therefore, the image a company web site portrays is a cornerstone piece in affecting an employer’s overall image. According to Williamson, the “usability and ease of use mediated the influence of web site orientation on organizational attractiveness perceptions” (Williamson, 2003, p. 260). Therefore, Internet savvy users directly related the company’s web site to the company’s overall quality. Most likely the type of employees the USPTO is looking to recruit, are tech and Internet savvy. They grew up with the Internet and studied science and technology. Therefore they will be closely correlating the website to the Office’s overall quality as a place of work.

7. Retention

Retention is a key concept to employers because of the importance of keeping those workers who are trained for and are familiar with a company. Specialized positions generally require intensive training for employees in order to prepare them for the nature of work involved with their fields of study. In addition, employee hiring and training can be costly, especially depending on the methods of recruitment used to attract employees. Therefore, if an employee is unhappy with a business and decides to leave, the time, energy and money spent on that professional can be a large burden for a company. With this in mind, companies are focusing on retention of their employees, which means keeping them happy and interested in the company's work.

One reason for a lack of retention in business today is a company's emphasis on structured business days vs. an employee's responsibilities outside of the office. Work is necessary to generate income, but education and extra-curricular activities are also realistic factors in everyday life for most families. Some businesses require their employees, usually parents in families, to work with no paid leave. In fact, nearly one quarter of working parents with children under the age of three are not compensated for personal or sick time (Levin-Epstein, 2006). Because of this reality, employers need to be flexible with their hours of employment, which pertains not only to hours worked on a given day, but also to the suggested "start and stop times" of the day at work. Parents have an obligation to their children, so the idea of a flexible schedule is crucial in retaining this group of employees. Without flexibility, there is a high turnover rate which threatens both the company and the well-being of a family (Levin-Epstein, 2006).

Employees often take exit surveys that indicate their reasons for leaving. In these surveys, the majority of workers who leave on their own say that they are unappreciated or that their supervisors treat them poorly (Glanz, 2002). Positive employee-supervisor relationships are crucial in the retention of employees because of the regular interaction that occurs between them. Barbara Glanz (2002) says that the top factor accounting for employee retention issues was the quality of relationship with a supervisor, which was found through studies by Development Dimensions International (DDI) in Pittsburgh, PA (p. 2-3). The DDI stresses the importance of trust and independence for an employee, as their opinion of a supervisor is affected by the amount of work with which they are

trusted. Also, Kenneth Kovach (1995) arranged a chart that shows the differences between what an employee finds important and those factors that supervisors value more. For example, he shows that employees value interesting work and high appreciation much more than do supervisors, while supervisors ranked job security and good wages higher on their value chart than did employees (Kovach, 1995). The discrepancies between what an employee and supervisor feels are important can cause conflict between the two, which will in turn affect the retention rates of unappreciated workers.

It is reasonable to suggest that some problems with retention stem from the hiring process. Some companies have trouble recruiting the qualified employees necessary for a position and, therefore, settle for lesser quality. If an employee who either is not prepared mentally for the task at hand or has a distorted view of the nature of work at a given agency, the employee will not stay satisfied with the organization for long. Dr. John Sullivan (2007), a Management professor at San Francisco State University, said that attrition problems start during the hiring process for companies, since there are recruiting factors that affect employees' decision to stay. For example, factors such as money, friends, and relationships at an organization will affect turnover. Therefore, an organization must be careful during the hiring process to select only qualified candidates who are excited about a steady career.

In conclusion, the team has found that employers use a variety of techniques and strategies to recruit the best possible candidates. In this review, the team examined the effectiveness of the various methods, and concluded that a multi-pronged approach with a focus on web-based recruiting is the best approach for the USPTO. In the following chapter, the team outlines the various methods necessary to propose an effective recruiting strategy to the USPTO.

Methodology

Due to the enormous backlog of patents awaiting examination, the USPTO needed help in developing strategies for recruiting young science and engineering students to fill Patent Examiner positions. This project was developed in order to make recommendations for a successful college career website, which targets engineering and science graduates, for the USPTO. Research in the areas of recruitment techniques and website effectiveness contributed to the advice that the project team has offered the USPTO. In addition, the team has explored how the web site fits in with a multi-faceted recruiting strategy. The objectives the team identified were to:

- Examine the different types of recruitment methods that are commonly used (e.g., employee referrals, websites, traditional advertising) to identify what approaches and strategies are most effective;
- Explore what content is associated with effective websites;
- Research effective design (aesthetics) and usability of a web site;
- Explore the college recruitment sites of other companies to find trends in content that attracts college seniors;
- Examine the means that other similar agencies have used to hire technically and scientifically literate personnel;
- Determine what techniques can be used to direct potential employees to the USPTO career site;
- Determine what skills and personality traits make a successful Patent Examiner; and,
- Determine the reasons for high turnover at the USPTO, in order to understand what job applicants need to know before they apply.

The project was completed using a variety of data collection methods. The project team was able to:

- Build a rich literature review by describing different recruitment methods and keeping a special focus on web site effectiveness.
- Conduct semi-structured interviews with current Patent Examiners to create realistic employee profiles for the website and thus show prospective employees

the agency's environment and a realistic portrait of the work involved. In addition, the interviewees were asked questions concerning their personal recruitment process with the USPTO and their views on the effectiveness of current recruitment methods.

- Interview a professional from Human Resources at the USPTO to find out more about the USPTO recruitment processes and to find out about the effectiveness of these strategies.
- Interview HR professionals at successful engineering companies to determine which methods they use to attract qualified job candidates.
- Talk with Supervisory Patent Examiners (SPEs) who also work as Hiring Managers and are in charge of selecting qualified candidates for Patent Examiner positions.
- Interview a web developer to inquire about usability of a web site, in order to keep users focused and interested.
- Briefly interview job candidates who are in the selection process at the USPTO to find out how they found the job.
- Speak with two union officials about the reasons that lead to Patent Examiner dissatisfaction and early resignation.
- Distribute a questionnaire to WPI undergraduate students who will enter the job market in 2008 to determine how they conducted their job search, what tools they used, and what information they found important to know about a potential employer.
- Conduct a focus group with new Patent Examiners, collecting different opinions about how they decided to apply to the USPTO and what aspects of the web site, such as usability and content, were key in affecting their decision to join the USPTO.
- Examine CDC web sites from prominent schools in the U.S. with which the USPTO could eventually develop relationships. The team will also speak with representatives from colleges to find out more about university placement offices.
- Analyze data provided by the USPTO concerning both: 1) prominent engineering schools; and 2) reasons for Patent Examiner resignation.

In the ensuing sections, the team describes each individual method in more detail. It should be noted that the literature review was a continuous process throughout the project.

1. Interviews

This project was developed in order to provide useful suggestions to the USPTO concerning an effective recruitment web site geared toward college students. To ensure the effectiveness of the suggestions, the team has examined what current Patent Examiners do and what recruiting methods work most effectively according to recruiters at the USPTO and other employers. In addition, the team has utilized other resources and contacts who possess knowledge about overall web development and also the effectiveness of current USPTO recruitment strategies. The literature review helped to illustrate how realistic descriptions of a job position can be effective in recruiting and retaining employees and also showed that many alternative recruitment methods, other than the web, are viable options. Research also showed that different aspects of a recruitment site could be helpful in attracting job candidates. In order to extract information from various sources within the USPTO and from specialists at other companies, a series of interviews were conducted.

All interviews conducted followed certain guidelines. First, each interview was prepared for in advance, as the team developed various groups of questions customized for the different interviewees. The questions were straightforward and focused specifically on the information that was needed from each interviewee. The beginning of each interview was initiated with a brief description of the scope and purpose of the project, which explained the team's purpose for performing the project and explained the information that the team was looking for. If the interviewees agreed to proceed after hearing this "preamble" that was read to them, then it was used as applied consent to use their thoughts to formulate conclusions. Any direct quotes or ideas from a given interviewee were not used in the final IQP report without first obtaining permission from the interviewee. The interviewees also had a choice to allow the use of a tape recorder during each discussion which many of them declined.

In order to keep notes and accurate data, two team members acted as scribes while the other chaired the meeting, keeping eye contact with the interviewee and asking questions. Once the project group had compiled the data from each interview, a thorough analysis was conducted in order to find patterns that supported certain evidence found in the literature review. Each set of interviews was based on certain information found in the literature and, therefore, the interview results were used to strengthen the team's findings, and also to give new ideas for research.

1.1 The contact person at the USPTO

The interview process in Washington, DC commenced on October 22, 2007, upon arrival at the USPTO. The first discussion took place with Mr. James Dwyer, the team's liaison to the organization. Prior to B term, the final proposal had been sent to him for review. The team asked him for contact information from the Human Resources department and the Hiring Managers within each Technology Center, so that it would be easy to approach professionals within the organization.

Before the team could contact any Patent Examiners, they needed to discuss the differences in Examiner positions with Mr. Dwyer. With the ability to cover many different specialty areas in Patent Examination, the team would be able to construct profiles of different Patent Examiners, in order to post bios on the career site and engage applicants with interesting information about Examiner positions. The USPTO is comprised of eight different Technology Centers (TCs) in which different patent areas are examined. In order to address each different area of Patent Examination, the team wanted to interview at least one Examiner from each TC; possibly two from the Computer and Electrical Engineering area (TC 2100 and TC 2600), because of the current need for Patent Examiners with computer and electrical degrees.

Throughout the time in DC, the team met with Mr. Dwyer weekly in order to discuss progress and the direction of the project. He was able to find us appropriate contacts in the HR department, different TCs, and also in the Patent Examiner Training Academy. In addition, he provided knowledge about the USPTO, which helped the team to develop new ideas for the recruiting goals of the USPTO.

1.2 Interviews with experienced Patent Examiners

Patents are requested in all different fields of science and engineering, requiring people specialized in these fields to examine them. Mr. Dwyer helped the team to develop a list of random Patent Examiner interviewees, each representing a different TC. These interviewees were Examiners who have been working for the USPTO for about five to ten years and have significant experience. The information that the team planned to acquire during each interview included:

- The nature of the work involved with each Technology Center at the USPTO
- The interesting features of an Examiner position, such as the ability to comprehend new technology
- The skills and experience needed to become a Patent Examiner
- What everyday life is like at the USPTO in a specific examination field.

In addition to standard job descriptions, these interviews also gave the team a sense of how satisfying the USPTO is to work for, and helped to create a profile of each Examiner position on the college career site. These profiles, known as testimonials, give web users the ability to view Examiner profiles and determine whether or not the experience of being a Patent Examiner is appealing. The point of each profile is to make sure that there are biographies on the website that pertain to all different technology fields within the USPTO. One generic Patent Examiner profile is not sufficient, since different Examiners work with different technologies and most candidates want to see the job, which pertains to their field of study. To analyze what each Examiner does, the team collected data from the department in which the Examiners work and data about the types of patents with which the Examiners regularly deal. The team asked each Examiner to take the information that was extracted from each interview and write a few sentences about their job that could be used in the profile. These personal descriptions help to give each Realistic Job Preview a personal touch in which the Patent Examiner could express his/her feelings about the job and appeal to the engineering and science job applicants.

Based on the level of experience of each Patent Examiner interviewed, the team was also able to inquire about their hiring experience and solicit suggestions to improve the web site. For example, the team met with two USPTO employees at the WPI career fair last September. Although they were both seasoned Examiners, they still had lots of

ideas to improve the USPTO's recruiting efforts. Current Examiners were able to provide the team with helpful information regarding important recruitment strategies and also the aspects of a Patent Examiner job that should be revealed to an applicant before they enter the selection process.

The team first met with Jeff Pelligrino, a WPI graduate from May 2007, who is a friend of the team. He is currently a Patent Examiner in the USPTO Patent Training Academy and has been training since graduation. This experience helped the team to become comfortable in an interviewing setting, and also to obtain information from Jeff concerning the recruitment process and what he found specifically effective in his job hunt. Although this particular subject was a recent hire to the USPTO, the team focused other Patent Examiner interviews on older representatives who were able to provide much more detail about the position.

Due to time constraints, the interviews with Examiners ran from a half hour to an hour in length, depending on how much information each interviewee had to offer. In addition, only four Patent Examiners were interviewed, due to availability issues and consent problems. After each interview, the team asked each Patent Examiner to take the notes from the discussion and write a two to three paragraph job description of their specific job that could be edited and placed on the web site. With these, the team was able to develop RJP's to help candidates understand the nature of Patent Examiner work.

1.3 Human Resource (HR) Interviews

HR personnel at both the USPTO and other organizations are professionals who work within the company, unlike headhunters, who specialize in recruitment of qualified employees. They spend their time trying to find new ways to attract individuals to their agencies and they may track the effectiveness of different recruiting strategies and techniques. The project team developed questions to ask the head of the HR department at the USPTO, LaRita Jones, to tap into this wealth of knowledge and expertise. In addition, the team contacted several different HR professionals at prominent organizations that specialize in engineering and scientific areas, requiring many engineering and science candidates throughout the nation. The corporations that the team contacted were determined based on connections the team members had with the HR

personnel at the companies, and also based on each company's focus on college recruitment. These interviews were structured to address topics such as:

- What recruitment methods they have used to hire candidates, and which of these methods have worked effectively
- What type of potential employees they are targeting, and why. This includes information about both education and personality traits and skills
- What information attracts college students to a company and what other aspects of a job are irrelevant to applicants
- The features that should be included on an effective career site.

The interview performed with the Chief of the Outreach Recruitment Branch of HR at the USPTO was scheduled to last about an hour, giving a substantial amount of time to attain feedback. Jones works behind the scenes of college recruiting events, which include career fair attendance and also information sessions on college campuses. She deals with organizing events, while Supervisory Patent Examiners actually attend the campus events. Therefore, LaRita's connections within the USPTO were utilized, since the team was interested in talking with SPEs and other professionals who understand the psychology behind selecting Patent Examiners. Although she does not work directly on site with college students, LaRita was quite knowledgeable in areas concerning recruitment and the effective facets of a multi-pronged recruiting strategy.

One goal that this project team will attain by interviewing the HR staff at the USPTO is to create a profile of the "ideal candidate" who the USPTO would like to recruit as a Patent Examiner, based on the specific qualities that the HR staff feels are important when considering a potential Patent Examiner. The profile will include work experience, required skills and knowledge, and characteristics that Patent Examiners should have. An example of these characteristics is the candidate's ability to interact and work with others in a diverse working environment. It is important to define and understand the type of person the team will be looking to target and recruit for the USPTO. In addition, this information may be helpful for adding a compatibility test to the website so that prospective hires can test themselves to find out whether the job will suit them.

The HR personnel at other agencies were a bit more challenging to interview because they were reluctant to reveal thorough descriptions of the methods that they use to recruit professionals, since they recruit similar candidates to those at the USPTO. The positive aspect of the interviews is that many people enjoy talking about their profession and, therefore, some HR personnel were happy to discuss recruitment options with the team. The most effective way to interview these professionals was to perform semi-structured interviews over the phone and take notes. Two companies were included in this study. The companies were BAE Systems in New Hampshire and BOSE Corporation in Framingham, MA. The team spoke with three different HR people. They spoke with the HR coordinator at BAE and the HR director and an HR staff member, who specializes in “professional recruitment,” at Bose Corporation. Companies with high employment and retention rates in similar fields of study to the USPTO were key in this study. The telephone interviews took approximately 30 minutes and the team had set up appointments to interview in advance. During each session, the team asked the interviewees about their position in their respective company and the recruiting efforts of that company, in order to establish their relevancy to the study. They were then asked a series of pre-developed questions, which helped the team obtain the necessary information to form suggestions for a successful college career site and overall recruitment strategy.

1.4 Supervisory Patent Examiner (SPE) Interviews

After discussing the recruitment strategy of the USPTO with Jones, the Chief of the Outreach Recruitment Branch, the team decided to interview SPEs in order to determine the qualities necessary for Patent Examiners. SPEs have dual responsibilities: they supervise Patent Examiners and help with recruitment at the office. There are approximately 380 SPEs among the eight TCs, and some of these attend career fairs on college campuses nationwide. Within these SPEs, there are roughly 30 Hiring Managers, who recommend the final selection. Each TC has two or three of these Hiring Managers. The team has interviewed five SPEs, who are also Hiring Managers, in order to find out about the USPTO’s approach to recruitment on college campuses, and also to learn about the selection process for Examiners. Through the interviews, the team inquired about:

- Which schools throughout the nation have engineering students who seem to be attracted to the USPTO, and what information the SPEs provide to these students
- What qualities and personality traits they look for in candidates who are up for selection and how they determine whether applicants possess these traits or not
- What potential Examiners should know about the job in advance, so that they are not surprised by the nature of a Patent Examiner's job
- Reasons that current Patent Examiners are unhappy with their jobs and what measures can be taken to retain more Examiners.

The team initially interviewed a SPE who was appointed to work closely with them, because of the convenience and availability. The interview with this SPE, Ayaz Sheikh, lasted about an hour and thirty minutes. He first presented an information session that is used on campuses for those students who want to learn more about the USPTO and Patent Examiner positions. Then he described the USPTO recruitment process. He was highly knowledgeable, and he supplied the team with names of other Hiring Managers to interview.

The other four SPEs were interviewed in pairs to save time. These SPEs helped the team to understand what they look for in job candidates and illustrated the hiring process that the USPTO currently practices. Results from each of these interviews have helped the team to draw conclusions regarding both Patent Examiner selection and the effectiveness of the USPTO at on-college campus recruitment. They also helped to further describe what Patent Examiners need to know in order to be fully prepared for work at the Patent Office.

1.5 Web Developer Interviews

The WPI team was developing recommendations for developing a recruitment web site for college students. Thus it was essential to interview several web developers to ask them about their experiences in working with effective web sites. The team talked to three different developers: Nick Galotti, who does web site coding and design for WPI, Jesse Perry, an information architect for Monster.com, and TMP, the company which developed the latest USPTO career web site. In order to obtain useful information from each of these web developers, the team decided to focus the interviews on areas such as:

- The aspects of a career site which keep users interested
- Web site design that focuses on making the site easy to use
- The important search engines to register with, and the ways to increase a company's ranking on these search engines
- The applications that speak to young engineers and the ones that should be avoided to keep a web site running efficiently.

Nick Galotti was a computer science student at WPI and currently works with the technical side of web development. Working for WPI, he has worked on sites geared towards engineering students. His responsibilities include being the webmaster, the content manager and managing web applications. To be more specific, Nick makes sure the interface of the WPI web site is user friendly and writes all the software for the web applications. He also manages all the changes to the site that are being requested. The interview with Nick was approximately 45 minutes in length, and was the first interview that the project team conducted.

Jesse Perry has worked as a web developer for about twelve years now and is currently working with monster.com. During the half hour interview, he was able to expand upon the usability of effective web sites and gave several examples of web sites for background research. In addition, he talked about the elements of a web site that are effective in recruiting engineering students and provided us with a study on the matter. Finally, he discussed search engine optimization (SEO) and design, referring the team to google.com to find out more about SEO.

1.6 USPTO Interviewees

The team was informed that the USPTO conducts interviews twice weekly for Patent Examiner positions. These interviews take place from 4:00 to 7:00 PM on Tuesdays and Thursdays. The candidates who were interviewed were from various backgrounds and there was a wide range of ages throughout the applicant pool. Once the team was informed of these interviews, one member was sent to the Elizabeth Townhouse building on the USPTO campus in order to ask a few simple questions regarding recruitment. The team could not occupy the interviewees for a large period of time, since the USPTO had a tight interview schedule and the interviewees were

generally eager to leave the site. The team only questioned those applicants who were at most two years removed from college, and asked them the following questions:

- How did you find out about the USPTO and the open Patent Examiner positions?
- What features of the job and the organization attracted you?

With answers to these questions, the team was able to take a total of 23 responses and analyze them to find patterns pertaining to which aspects of the job are most important. In addition, these results have helped the team to determine which areas of recruitment are utilized most by college students in finding job opportunities at the USPTO.

1.7 USPTO Union Officials

The last group of people the team chose to interview was union officials, who work at the USPTO to protect the welfare of Patent Examiners. Referred to as the “manager’s conscience” by one official, the union represents the Patent Examiner work force to make sure that the nature of the job and the working conditions are fair and that Examiners are appropriately compensated for their labor. In order to gain a sense of how these officials interact with Patent Examiners and bridge the gap between Examiners and supervisors, the team conducted a dual interview with the President of the Patent Office Professional Association (POPA), Robert Budens, and POPA Treasurer, Randy Myers. From this joint interview, the team hoped to learn more about:

- What the job of a union official is and how they deal with problems between Examiners and upper level management
- What some of the most common issues are for employees
- What aspects of the position cause the most complaints
- What measures the Union is taking to help improve the working conditions of Patent Examiners.

Robert and Randy are also former Patent Examiners, so they provided some insight into the personality traits that are necessary for Examiner positions. These interviewees were excellent sources of information, because their job is to negotiate agreements for the Patent Examiners. The union officials were helpful in determining which factors cause the high attrition at the USPTO. From the interview the team was able to identify a full

spectrum of facts of Patent Examiner work, which are important for an applicant to know before applying.

2. Questionnaire for WPI Seniors

In order to gauge how current engineering and science seniors conduct their job searches, a questionnaire was sent out to undergraduate seniors at WPI. Allan Johannesen, from WPI's Office of Administrative Computing, was able to provide the team with the email addresses of all the seniors at WPI. Chuck Gammal of the Student Government Association at WPI gave permission to send the survey out. The email was sent out to 719 seniors late October at the beginning of the second term when the students were getting back to campus and were getting ready to focus on school again. The questionnaire comprised a preamble with assurance of confidentiality and six simple questions were asked in order to enhance the response rate. Survey Monkey was used to develop the survey. The team explained in the email that the questionnaire was for a research project and stressed the importance of their help. The team anticipated a reasonable response rate (approximately 25%) since the seniors might be sympathetic to the team's intentions, because they have already completed their IQP. The team asked what avenues the students have pursued to find information about employers, how they knew what employers to look for, if they had heard of the USPTO, and, if the internet is used, what information they found helpful for their decision making process. A deadline was imposed on replying to the questionnaire to allow the team time to evaluate the responses. There response rate was 18.8% and the answers on the survey were analyzed by Survey Monkey.

3. Focus Groups with Newly Hired Patent Examiners

Focus group interviewing allowed the team to obtain large amounts of information in a relatively short amount of time. In order to aid the USPTO in hiring 1,200 new Patent Examiners, the team conducted an extended focus group interview with seven recently hired Patent Examiners. An extended focus group is a focus group with a preliminary questionnaire. These new hires were recently released from the Patent Training Academy to become Patent Examiners. Recruitment and hiring was fresh in the

new Examiners' minds and they offered insight about the current hiring process. The focus group provided spontaneous responses from the participants and revealed aspects of recruitment the team had not originally anticipated. In a group setting, the participants were able to bounce ideas off of one another, argue for their respective opinion through detailed examples, and reveal in depth insight into the recruitment process.

Upon arrival at the USPTO, the team requested the names and contact information of recently hired Patent Examiners from the liaison, Jim Dwyer. A varied group of recent female and male hires from various disciplines, who are currently in the Patent Training Academy, were selected to participate in a one-hour focus group interview. Prior to the focus group, the participants were asked to fill out a brief questionnaire, which was first reviewed and approved by HR employees and our liaison. It included topics to be discussed during the focus group session. Conducting an extended focus group, which included administering a questionnaire prior to the session, provided many research benefits. The questionnaire consisted of multiple-choice and fill-in questions which provided an understanding of the participants prior to the session. Sending a questionnaire before the session allowed the moderator to focus on more in-depth topics and questions during the actual session. From questionnaire answers, the team identified dominant positions or stances, and disparate opinions on the main issue of recruitment. The moderator was then able to structure his or her questions based on the answers to the questionnaire. In addition, the questionnaire stimulated the participants' thoughts on recruitment at the USPTO prior to the session, thereby enhancing the quality of their responses during the session.

The focus group was organized in a non-structured manner. The relaxed nature of the session made the participants more comfortable in sharing their thoughts and speaking candidly on the topic of recruitment. With only one hour to obtain as much information as possible, the moderator merely served as a guide, suggesting and guiding topics of discussion, while the participants talked and debated for the majority of the time. The other two team members acted as observers, taking notes and recording participant reactions and behaviors.

The topics and questions were reviewed and approved by HR staff as well as the team's contact. Some of the topics and questions the moderator asked were:

- What was your opinion/image of the USPTO before working here?
- What attracted you to the Patent Examiner position?
- What methods did you use to learn more about career opportunities at the USPTO? Did you find these methods to be easy, effective, and helpful?
- What was your overall feeling about the recruitment/hiring process?
- Do you have suggestions on how to improve the USPTO's recruitment process?

After conducting the focus group, the team was able to compile the recordings and written notes. Permission was requested from the participants to either use their name or to use a pseudonym to quote their comments. The statements and answers of the participants were analyzed, and the conclusions drawn helped the team to create a new, more effective recruiting system for the USPTO.

4. Archive and Database Research and Collection

Career Centers are departments within a university that aid students in the planning, searching, and hiring aspects of employment upon graduation. In order to determine which university career centers to contact, the team used seven levels of criteria. The universities were ranked in different categories: best undergraduate engineering program, best graduate engineering program, highest number of BS engineering degrees awarded, highest number of MS engineering degrees awarded, colleges where most examiners were hired by the USPTO, universities devoted to national and public service, and universities with the most diversity. These categories were chosen in order to fill all the requirements for the Patent Examiner position. The top twenty universities in each category were listed, and the universities that were listed most frequently were contacted. It was important to choose schools with a large engineering program, a previous history of hiring success, national ranking of engineering program, commitment to public service, and diversity. The career centers of polytechnic universities, such as MIT and RPI, engineering schools, such as Olin College, and large science research based universities, such as the University of Michigan and Cornell were of particular interest, because they have useful employment data on science and engineering graduates.

It is important for the USPTO to understand the job-search behavior of its target recruits. By analyzing how engineering and science students search for jobs, including how they hear about them and which career paths they ultimately choose, the team was able to draw useful conclusions on recruiting techniques for the USPTO. The information was collected by contacting the head of the respective career center, either by phone or email, and informing the career center director about the purpose and objective of this project. Information, statistics, and percentages of particular interest to the team were:

- The methods engineering students utilize to search for jobs;
- The percentages of students who find jobs through the career center;
- Statistics on the methods seniors used to find a job upon graduation;
- The distribution of fields or companies student work for upon graduation.

Through the analysis of this data, the team was able to identify patterns in responses and draw conclusions on the recruitment methods, career paths and choices of engineering and science students. This helped the team propose an effective and customized hiring strategy for the target recruit.

The team also conducted a half-hour phone interview with the Director of Post Graduate Planning, Sally Phelps, from Franklin W. Olin College, which is an extremely selective and well-respected engineering and science college in Massachusetts. Ms. Phelps previously worked at BOSE Corporation as an HR manager, focusing on recruitment. The phone interview with Sally Phelps was extremely useful to the team, because of her recruitment experience in the private sector as well as her career advising experience at an engineering college. The team asked questions about campus outreach recruitment forums and their effectiveness, the important aspects students look for in an employer, and conversely, the traits an employer looks for in a student, and the aspects that make a recruitment web site effective.

5. Evaluation of Career Sites

In order to determine the effectiveness of the current USPTO career site and make suggestions to increase its effectiveness, the team evaluated the criteria used to measure the effectiveness of a career site. Through interviews with experts in web design and HR

recruitment, and through review of Fortune 500 company career sites, the team was able to identify the key aspects necessary to comparatively analyze recruitment web sites. The team examined 2007's top ten Fortune 500 career sites because these companies are some of the most successful in the world, suggesting the effectiveness of their recruitment strategies. Necessary content of a recruitment web site was determined through examination of other companies' career sites, their college recruitment sites (if available), and also through the literature review. Once the team found reoccurring design elements on the sites of other companies, the content was categorized as primary, secondary or tertiary, in order of recruiting importance. This template, or guide, was used to analyze the current USPTO career site, further enabling the team to identify the areas, which need to be improved, and make the appropriate recommendations. Four key aspects of a career site have been covered multiple times in the literature. To begin forming criteria for an effective career site, the team examined these four aspects first:

- Overview of the company, including topics such as values, motives, goals, and credentials;
- Reasons given for why the company is the desired employer of choice, which may include nature of the work, employee benefits, diversity in the workplace, opportunities for educational or professional growth, and social responsibility, such as sponsorship of philanthropic organizations;
- The aspects of each company's work environment;
- The ability to browse available job positions, and apply for those positions electronically.

Determining the strength of a career site is a difficult task, as there are no set guidelines for what is actually effective to recruit engineering and science students. Instead, the continuous literature research helped to show patterns of what characteristics seem to work and, also, which traits are unnecessary. HR professionals were useful in determining effective criteria for recruitment sites. HR people from other agencies have helped the team to understand what criteria were used in developing their respective web sites. With data on different recruitment sites, the project team was able to analyze the USPTO career site and suggest solutions to perceived problems with the current career site. Through the analysis of information gathered from web design experts, HR

personnel, and examination of key components in current Fortune 500 company career sites, the team was able to evaluate the USPTO's current career site and make appropriate recommendations for improvement.

6. Questionnaire with Future USPTO Employee

The team contacted a WPI senior, Brianne O'Neill, who was going through the recruiting and application process to become a Patent Examiner at the USPTO. The team sent her a questionnaire that asked twelve short answer questions through email, because it was difficult for her to schedule time for a phone interview. The questions were centered on the topics of the following:

- USPTO image
- Recruitment strategies and their effectiveness
- The career site content, effectiveness and ease of use
- Attractive and unattractive features of the Patent Examiner position
- Ease and clarity of the application process.

The questionnaire gave the team a sense of what this one student thought of the USPTO recruitment and application process. It pointed out many of the positive and negative aspects of the current recruitment strategy, which helped the team formulate suggestions for improvement and questions for newly hired Patent Examiners.

7. Discussion with TMP Worldwide

Starting on October 1, 2007, the USPTO career site was updates to improve usability and content. TMP Worldwide is the advertising agency that worked with the Patent Office to improve this web site. As a result, the team wanted to talk with the agency about the new site and the differences from the previous one. In addition, the team wanted to ask about:

- How TMP determines what content is effective on a site
- What makes recruiting for the USPTO different from other agencies
- Which technologies the USPTO should use to emerge as a top recruiter (such as podcasts and virtual job fairs)

The discussion took place at TMP Worldwide headquarters in Virginia. The team drove to the meeting with Jones from HR, who was going to learn about Second Life, a virtual reality system in which people can form profiles of themselves and create their own lives online. Five TMP advertising professionals were present and the majority of the meeting covered Second Life. However, the team's questions were answered by the representatives prior to the meeting and, therefore, responses were delivered in writing. The team then used this information to determine which aspects of the career site were changed and the effectiveness of certain features.

Results and Analysis

The team has done extensive research in business and psychology journals regarding personnel management and web recruiting to make recommendations for a college recruitment website. The team interviewed USPTO employees, college students, HR staff at companies in the private sector, web developers and career development staff at universities regarding recruitment and content and design of a career web site.

Interview topics included:

- The current USPTO recruitment process, with a focus on the facets that can be improved to strengthen their overall strategy
- The attractive aspects of working for the USPTO
- The realistic aspects of the Patent Examiner job
- Content for a career site that is geared toward engineering and science college students
- Alternative recruitment techniques
- The retention rates at the USPTO and the reasons why Patent Examiners leave.

In this chapter, the team will discuss the results that were obtained. The chapter is divided into several topics: the USPTO recruitment strategy, the Patent Examiner job, retention of Patent Examiners, the college career web site, alternative recruitment tools, and working for the USPTO. The team will show that college students mainly apply for the job through interactions with Patent Examiners at career fairs. When they apply online, they find the current USPTO application process confusing and that the site needs more details about the job, the pay scale, organization of the USPTO, and advancement opportunities. The job offers many attractive benefits, but high attrition is primarily due to the production system.

1. Recruiting

The WPI team's primary focus is to develop suggestions to recruit college students. Therefore, the team first discusses college seniors' general job search behavior to determine what methods college students use to find a job. Then, the reasons for applying for a job as Patent Examiner are discussed, yielding insight into what elements

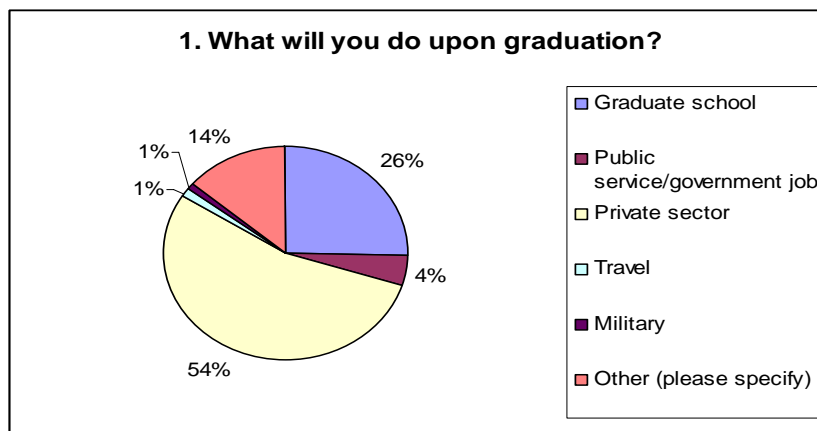
should be advertised to students on the career site. Finally, the recruitment process at the USPTO is explained in detail and an evaluation of the strengths and weaknesses of their current recruitment techniques was conducted.

1.1 Job-Searcher Behavior

The team distributed a survey to all 719 WPI seniors about their job search behavior, interviewed a WPI senior who applied for a Patent Examiner position, talked to new hires at the USPTO in a focus group to find out how job searchers go about getting a job, and looked at University Career Center data regarding effectiveness of recruiting practices and factors which affect job decisions.

The first question that arose is: where do college students see themselves working in the future? The WPI survey, which had a response rate of 18.8%, showed that 54% of the student were going into the private sector upon graduation, 25% said they will go to graduate school and only 4.4% showed interest in the public sector (see Figure 1). In a postgraduate report for the Cornell University Class of 2007, only 5.2% of graduates pursued a career in government. Similarly, only 3.18 % of 2007 University of Michigan Engineering graduates accepted a government job. Apparently, college students either don't want to go into the public sector, or they simply don't know what opportunities the government has to offer.

Figure 1: Results WPI Seniors Survey

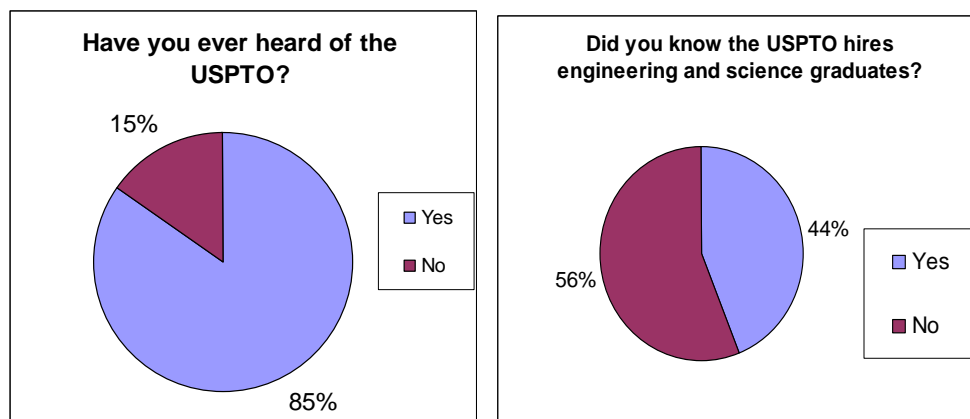


Source: Survey Monkey, 2007

It was interesting that at WPI, 85% of the 135 students who answered the survey knew of the USPTO and 44% of those even knew they hired engineering and science students (see Figures 2 and 3). This suggests that the USPTO has quite a bit of name recognition, but the right message is not being sent; students need to know that the USPTO is a potentially good employer. Although the sample surveyed was too small to draw general conclusions, it did target the kind of applicant the USPTO is looking to hire.

According to the Supervisory Patent Examiners (SPE) who go out to recruit at career fairs, the USPTO is not well known among students. The SPEs see many schools and students during career fairs, workshops and other events, and can more accurately determine how many students have heard of the USPTO. They say that there are only a handful of students who know of the USPTO; usually because they were taught about patent protection in their engineering courses. Though the WPI seniors seem to know of the USPTO, overall, not enough students know about the USPTO opportunities.

Figures 2 and 3: Results WPI Seniors Survey



Source: Survey Monkey, 2007

Next, the team explored the techniques or methods college students use to find a job. Various recruitment techniques are available. Cornell students (61.6%) use on-campus interviews, career fairs, and CornellTrak job listings provided by the Career Center to find their jobs (Cornell Career Services, Cornell University, 2007). In the survey taken by WPI seniors, 34.6 % stated that they found career fairs at WPI to be the most helpful way to find a job, with a score of 4.1 on a scale of 1 being least helpful and

5 being most helpful (See Table 2). However, referrals from family and friends, the company web sites, and Internet job databases were close behind. Similarly, engineering students at the University of Texas listed employer information sessions, career fairs and on-campus recruiting as the top three effective recruiting practices (University of Texas Engineering Career Advising Center, 2007). Also, in the preliminary survey given to USPTO employees who were recruited in the last 6 months, 4 out of the 6 participants heard of a job opportunity at the USPTO through a career fair at their university. This means it is important to keep good relationships with schools, visit career fairs, strengthen alumni networks, and promote referral programs in order to attract college students. In addition, it is also a good way of increasing USPTO name recognition so students know to look for Examiner jobs.

Table 2: Results of WPI Seniors Survey

	Very unhelpful %	Unhelpful %	Neutral %	Helpful %	Very helpful %	N/A %	Rating Average (Scale 1-5)
Career fair	4.4	2.9	13.2	31.6	34.6	13.2	4.03
Internet job databases	2.3	9.1	23.5	24.2	25.8	15.2	3.73
Company's website	2.2	9.0	17.2	32.1	29.1	10.4	3.86
Friends or family	2.3	7.7	26.9	23.1	25.4	14.6	3.72

Source: Survey Monkey, 2007 (Modified)

1.2 Why do People Apply for a Patent Examiner Position?

The team asked people who interviewed with the USPTO, seven newly hired Patent Examiners, several experienced Patent Examiners, and a WPI senior why they wanted to become a Patent Examiner. The main reasons Brianne O'Neill, the WPI senior, applied for the job, were the possibility of law school tuition compensation and the flexible work schedule. Furthermore, she mentioned the independent work style, good benefits and job security. On the other hand, she is concerned the job will be boring and is surprised the USPTO does not offer relocation assistance.

The newly hired Patent Examiners listed perks like the law school reimbursement, the salary, the job description and work environment as the main reasons for joining. Experienced Patent Examiners and those who had worked elsewhere before joining the USPTO named the job security as their number one reason for working at the USPTO. About 85% of the people who interviewed at the USPTO for a Patent Examiner job told the team that they applied for the position, because they wanted to be on the cutting edge of technology. Additional reasons why current employees applied were:

- No need to wait until a position becomes available; there is always freedom to advance in your career
- The hoteling program, allowing a Patent Examiner to work from home
- Receiving a laptop to facilitate working overtime
- The sign up bonus
- Location
- The workload is always known.

These reasons should all be displayed prominently on the career site to advertise the job and attract new job applicants.

1.3 USPTO Recruitment Methods

The USPTO has hired over 3,300 Patent Examiners in the last three years. Consequently, the hiring process is not especially selective, even though the job is highly specialized. The most important attribute for a candidate to have is a technical college degree. The USPTO uses four main methods to recruit Examiners: employee referrals; the Internet (including job boards and their own career site); career fairs; and print advertisements. To evaluate the USPTO's current recruitment strategy, the team talked to several people. Jones was interviewed to explain the role of Human Resources staff. In addition, the team interviewed five Supervisory Patent Examiners (SPEs) to inquire about Patent Examiner skills and the methods used to attract qualified candidates.

According to Jones, the method that brings in the most employees at the USPTO is employee referrals. She stated that roughly thirty to forty percent of the staff is recruited through referrals, which was named the top recruiting technique in the literature review as well. However, the USPTO finds that these employees are mostly people with

previous work experience and not straight out of college. Unlike many other companies, the USPTO provides no incentive for an employee referral system. The USPTO fears that an incentive might stimulate an employee to refer an under-qualified candidate.

The USPTO uses the Internet as their second best recruiting tool. Jones informed the team that the office approaches recruitment in two ways on the web: career building web sites and the USPTO career web site. The USPTO HR staff negotiates contracts with career building web sites and job databases to advertise job openings. Also, they have worked with TMP Worldwide since 2002 to build the corporate career site. In fact, TMP recently updated the recruitment site for the USPTO in October, 2007.

As a business, it is important to place job openings on the web, because of the widespread use of the Internet to find jobs in recent years to find jobs. The USPTO has a link on their homepage that leads directly to their career web site, where users can view what the USPTO environment is like, the nature of Patent Examiner work, and how their benefits compare to other agencies. The ability to include information on the site about salary ranges and benefits is an advantage of the federal government, as private industry will usually not reveal such information prior to an interview.

Next, college career fairs are used by the Patent Office to recruit college seniors. Career fairs have been used for many years as a popular method for employers to find applicants, and applicants to apply for jobs. It is an excellent forum for both sides of the employment coin. Employers talk with, and are seen by, a large number of potential candidates. On the other hand, applicants can apply to, and interview with, many companies all at one time. It is a more personable way than sending a resume and application, as well as reaching out to a potential employee, and attaching a face to a name. The University Partnership Team, a new facet to USPTO recruitment, has been devising a plan to establish relationships with engineering and science programs for the USPTO to target. This Partnership was formed by three Technology Center (TC) directors and an outreach specialist, and has the goal of educating college students about intellectual property (IP) and providing further opportunities to those students who show interest in the IP area. The HR staff and the University Partnership Team work together to establish relationships with select schools, based on previous applicant numbers from

these universities nationwide. For example, the University of Maryland has emerged as the greatest source of new hires for the USPTO, especially in 2006 (see Table 3).

Table 3: 2006 Total Hires per University

2006 Total Hires	1193
University of Maryland	86
George Mason University	45
Virginia Tech	39
Johns Hopkins University	31
City College of New York	29
Penn State University	28
Polytechnic University	25
University of Pittsburgh	22
NC State University	21
George Washington University	20
Rutgers University	20
NJ Institute of Technology	19
University of Florida	17
University of Virginia	17
Morgan State University	16
Ohio State University	16
Georgia Institute of Technology	15
University of Michigan	15
Cornell University	14
Marquette University	14

Source: USPTO HR, 2007

This table represents the schools from 2006 that had the most graduates join the USPTO. The numbers do not add up to 1,193, since the table does not account for university that hired fewer than 14 employees. In addition, those professionals who came from other jobs are not considered on this chart. Once schools have been chosen, the USPTO attends their career fairs. Often there is an opportunity to conduct interviews directly after the fair and provide an information session about intellectual property and the patent examination process.

HR is involved with career fairs at schools, including developing brochures and other promotional material that accompanies the USPTO booth. The HR outreach branch promotes, coordinates and researches where the recruiters should go based on prior efforts at those locations and rankings of the schools. However, the HR staff at the

USPTO is becoming more involved with on-site recruitment at local colleges and job fairs. SPEs are the USPTO agents who go to the career fairs and they have the option of setting up interviews on campus, over the phone, or at the USPTO. In 2006, the USPTO sent SPEs to college career fairs in 30 states, and successfully recruited from each of those states. These supervisors are sent because they understand the technologies examined at the USPTO, and can therefore better explain the job to technical students.

The last major method that the USPTO is using is print advertising, which they say no longer works cost-effectively. Therefore, the organization plans on advertising with fewer newspapers and distributing fewer print advertisements in the upcoming year.

1.4 Effectiveness of USPTO Recruiting at Career Fairs

The team has heard about and experienced the effectiveness of the career fairs for recruitment and hiring. Patent Examiners and current candidates said that most college students hear about jobs at the USPTO during a career fair at their school. In an interview with two SPEs from the USPTO, who regularly attend career fairs to recruit college students, the team found that career fairs at universities on the East Coast are the most successful from a hiring standpoint. Cheryl Tyler and Tarik Hafiz each have total of 13 years of recruiting and hiring experience as SPEs. They have found that students at career fairs are most interested in, and receptive to, information on salary, flexibility of the job, work schedule, the number of employees hired per year, the campus-like environment, and the social activities and clubs.

Lynn Field and Robert Kim, who are also recruiting SPEs, have found that the biggest problem at career fairs is the USPTO's lack of name recognition. Most students who approach the booth haven't heard of the USPTO, don't know what the office does, or don't know that the USPTO is looking to hire science and engineering graduates. They both agreed that sending alumni to the career fairs is a good way to attract students, because it is easier for students to talk with alumni than with complete strangers who are unfamiliar with the school and the rigor and reputation of the academic programs. Unfortunately, most career fairs are planned for September and October, which is the end of the fiscal year at the USPTO. Therefore, it is a difficult time for SPEs to leave their work. Both Field and Kim agreed that there is certain information to which students at

career fairs are most receptive. This includes the salary, the career ladder, and the accelerated rate of promotions based solely on individual production, not openings or office politics. Also, students are attracted by the law school tuition reimbursement program and the hoteling program, which allows Patent Examiners to work from home.

Connor McGrath and Annemarie Field went to a career fair at WPI to visit the USPTO booth and meet the recruiters. Immediately, they experienced difficulty in locating the USPTO booth, since the displays were not large enough to be easily noticed and the text on the banners was too small. Since the USPTO is not well known among college students, it would be important to advertise the USPTO name more prominently at the fair. The recruiters were helpful and offered interesting information, but mentioned that they had not talked to many students.

Brianne O'Neill, the WPI senior who is currently in the hiring process at the USPTO, stated that she first came into contact with the USPTO at a career fair. She was approached by a SPE and, at first she was not interested but, after talking about the job for over half an hour, she started considering the USPTO as a potential employer. O'Neill was most interested in the law school reimbursement program. When she learned that the USPTO pays for law school for full-time employees, she "was sold at working at the USPTO." On the other hand, one current Patent Examiner, Jeff Pelligrino, said he already knew he wanted to work at the USPTO because he was interested in intellectual property. Therefore, Pelligrino sought out the USPTO booth at the WPI career fair.

There are students who are familiar with the organization and visit the USPTO booth on purpose, and then there are some who hear of the USPTO for the first time when walking by the booth. Either way, it is important for the USPTO to go to career fairs to interact with students. The advertising should be clear enough that students don't miss it. At the fair, the recruiters should tell the students about the salary, flexible work schedule, and career path, because those are the aspects of the job that college students value the most.

1.5 The Hiring Process

Candidates must always submit their application online before they are considered for the job. The application is then reviewed by the External Hiring branch, which deals with ratings, rankings and selection process of new hires. A list of minimally qualified applicants is made. The candidates then complete a Job Compatibility Assessment, which is used to determine whether the applicant is capable of doing the job. Next, candidates are required to interview for the job. These interviews are conducted by SPEs who judge the applicant's fit at the agency. During these interviews the specifics of the Patent Examiner work are explained, emphasizing the production quota system. Although this approach should be effective in keeping unqualified applicants from taking the job, many SPEs claim that the interviewees are simply too eager to get the job that they do not fully grasp the consequences of the production system. After interviews are finished and applications have been reviewed, the Hiring Managers make the final hiring recommendations, and the Director of the Technology Center makes the actual hiring decision.

O'Neill, the WPI senior, applied for a Patent Examiner job and gave the team insight into the application process. Her biggest complaint was the complex online application process. She found the site confusing, which was also the opinion of the newly hired Patent Examiners who were interviewed by the team. They had varying opinions of the USPTO career site. On average, they found the site to be only somewhat informative, helpful and easy to use. O'Neill would like to see a list of the documents needed for the process and the steps to be taken. She also was concerned about uploading her resume and losing the carefully prepared formatting. The Patent Examiners all complained about the length of the application process online (2-3 hours), but many of them had used the old system. The USPTO is currently using USAJobs to post positions, because it is easier to use than the old system and job seekers looking for a government job know to go to USAJobs to find job openings. O'Neill and the Patent Examiners had trouble finding out what an Examiner's duties are per GS level and how to advance their careers. The separate USAJobs site explains some of this, but the explanation is buried in the web site. It was also not clear which units within the Technology Centers were hiring. The newly hired Examiners also wanted to see more

details about the Patent Training Academy. They wanted to know what the Training Academy class schedule is like, what kinds of classes are offered, and the structure of the classes.

Apparently, the flow of the application process is also dissatisfactory. The Patent Examiners described their experiences to the team. One had not received a response from the USPTO for a long time after his interview, even after calling many times. Another kept on receiving an email message saying she had not submitted all of the documents online, when she in fact had submitted them all. One applicant had to fly in for a five minute interview while another was interviewed over the phone. Someone else received a call from HR to call back a certain number, but the number was the main USPTO phone number. All new hires the team spoke with experienced delays in the application process because errors were made in processing their applications.

Clearly, the hiring process needs streamlining. Job postings need to be more detailed, because people don't know what they are applying for. Due to administrative mistakes and web design, the procedure is too long and confusing. This may deter good candidates from applying. Applicants who live far away should be able to interview over the phone. Finally, the career path and salary need to be explained in more detail to inform the job seekers.

2. The Patent Examiner Job

In order to develop suggestions for a recruitment web site, it was important to understand what the Patent Examiner position entails. In this section, the team will analyze interviews with eight Patent Examiners and five SPEs at the USPTO who have described the position at length. In addition, Union Officials from POPA (Patent Office Professional Association) were helpful, since they too were once Patent Examiners and now deal with problems between employees and the agency. These interviews aided the team in determining which skills are necessary for Patent Examiners and how these employees perform patent reviews at the USPTO.

2.1 The Patent Training Academy

Upon arrival at the USPTO, newly hired Patent Examiners will learn about the patent examination process, which is not taught anywhere else. The lack of available experience before working for the USPTO makes the Patent Examiner position unique and challenging. Therefore, new employees are required to participate in an eight month-long training program regarding the patent examination process. This intensive training period at the Patent Training Academy (PTA), was started in January, 2006. The current PTA is a step forward from the old system of training Patent Examiners. Marc Norman, who has been at the USPTO for nine years, explained that he only had a two week training period before he started examining patent applications. This training included an introduction to the software used by Examiners and a brief introduction to patents. After the two weeks it was up to the SPEs to train them. This system didn't work because it took too much of the SPEs time.

About every month, a new group of 128 employees starts their training. They are divided into eight labs of 16 Examiners each, guided by a primary trainer and an assistant trainer. Each group consists of people with the same or similar technical background. They attend lectures, similar to college classes, in which they learn about all aspects of the job. After about two months, the new hires start to work on actual patent applications, while still attending two or three lectures per week. For roughly the first two months that Examiners review patent applications, there are no production quotas. However, as the Examiner progresses, he or she is expected to increase production. This technique for teaching the process promotes learning, because Examiners learn from the number of cases that they complete. At the end of the training, each Examiner is required to take a proficiency test which determines the employee's skill levels. The purpose of the test is to tell the Supervisory Patent Examiner what the Examiner's strengths and weaknesses are and whether they are qualified to continue the work.

With such an intensive training process for Patent Examiners, the USPTO could use the PTA as a strong recruitment tool. Sally Phelps, who is the Director of Post-Graduate Planning at Olin College in Massachusetts, told the team that students want to know about the available training that an organization offers for new hires. This

extensive approach to training can give potential employees peace of mind when considering the USPTO as an employer.

2.2. The Patent Examination Process

The SPE receives a patent application (also referred to as a case) after they have been submitted by the inventor and sorted according to technology. A special team reviews the case first to see if the application is complete before sending it on to the Examiner. Then, the Examiner reviews the application and researches existing technology in databases to make a determination on the patentability. This research is necessary because only new, useful, and non-obvious inventions receive patent protection. The patents and articles on existing technology are called “prior art.” The Patent Examiner helps to determine the proper scope of the invention claimed by the inventor, conveying the government’s position to the applicant or his or her patent attorney about the technical and legal requirements. The applicant or attorney will try to write a patent application that contains broad claims, meaning they try to claim as much as possible in a patent request. Sometimes they claim multiple inventions in one application, because it would be cheaper to file just one application. Therefore, Examiners have to work with the applicants and their attorneys to either narrow the scope of the patent application, or ask them to split up the inventions and file separate applications, or explain why certain claims of the application can not be patented. This process can take years and the final action of the Examiner involves either approving or rejecting the patent.

2.3. Production

Production is one of the most important measures for evaluating Patent Examiners at the USPTO. Each Technology Center is expected to review a certain number of patent applications and, therefore, the Examiners in each Technology Center have bi-weekly production quotas. There are two “counts” possible per patent application. A count is the completion of an office action, referred to as either a new case or a disposal. These actions are written correspondence with the applicant or his attorney with regard to the patentability of the application. Each count is counted towards the

production of the Examiner. Once the quality of either of these actions is approved by a SPE, the Examiner receives credit for it. As an Examiner's career progresses, he or she is expected to examine more cases and perform well independently.

The production quota system is measured by two different equations, depending on experience. The equation for experienced Examiners is $(N+D)/2$, and recent hires are given the formula $(2N+D)/3$. This accounts for the fact that new cases are more difficult to handle than disposals, so recent hires receive more credit for completing new cases. In these equations, "N" represents a new case and the first office action taken with the case. The variable "D" represents disposal, which is the allowance, rejection or abandonment of a case. Each technology is different and, therefore, Examiners in more difficult technology areas are given more time to complete cases than others. In addition, there are "GS-Factors," which are used to account for the experience level of individual Examiners. A more in-depth explanation of this model can be viewed in Appendix 4.

The United States Government Accountability Office Report for 2007 (GAO Report), concerning the patent backlog and the efforts to hire new employees, showed that 67% of Patent Examiners from 2002 to 2006 said that the production goals are one of the primary reasons that employees might resign from the agency. The team interviewed a GS-14 Patent Examiner, Lisa Caputo, who explained that the production-based system is set up so that there are case deadlines every two weeks. The constant production can be viewed as somewhat demanding; however, the flexibility that the office offers with regards to flexible hours, teleworking, and hoteling assures that work will be completed before the two week deadline. The consistency of the production system is also advantageous because you always know which cases are due when, and can plan accordingly for a vacation. For example, she wanted to take a vacation, so she completed the cases that were due during her vacation. Because she knew what she was required to do in the next week, Caputo was able to complete work early and take the vacation that she wanted. In addition, several Patent Examiners said that the production system is not overwhelming and that they enjoy working in a quota-based environment. Jeff Pelligrino, who is currently in the PTA, explained that the work is not extremely difficult and that he likes the nature of work at the USPTO. Patent Examiners who understand the nature of the job and can work independently do not seem to struggle with the production

system. These employees are the necessary target for the USPTO, since they are suited for the job.

Although it is a difficult aspect of the Patent Examiner job, production makes the career ladder quite attractive. In some agencies, the employees have to wait until positions become available, and also have to worry about office politics. Patent Examiners advance in the USPTO solely based on their personal production. Therefore, an employee can determine his or her own career path by meeting production quotas. In the first year Patent Examiners are evaluated semi-annually and can potentially be promoted twice per year based on their production. In order to advance to the next Government Scale (GS), an Examiner must complete more than 100%, but if they don't advance they still receive a raise. This system provides job security to those Examiners who can keep up with their work and complete their tasks efficiently.

The production goals in place now were established in 1976. At that time, there was speculation about how many patent applications should be reviewed in a given period of time. As a result, the production equations evolved and different technologies were associated with varying difficulties. Many problems that show using the current production system, such as low quality and inability to meet goals, are due to these outdated quotas. The increase of prior art and further advancements of technology make production goals more difficult to meet now than in the 1970s. The Patent Office Professional Association is currently working to lower the production standards for Patent Examiners, who do cite high production goals as the number one reason to leave the office. To this end, the USPTO must be careful in selecting employees too, since those chosen to examine patents must be able to work under high-pressure conditions and meet production goals.

2.4 The Career Path

One aspect of the USPTO that seems to attract candidates and helps maintain current Examiners is the job development opportunities and the ability to advance in GS level. Patent Examiners, SPEs, and candidates for USPTO positions have all revealed that they are interested in the potential to succeed at a rapid pace working in the office. The USPTO has a salary chart which displays job candidates salary ranges for the benefit

of job applicants. The salary table (Table 9) lays out the different GS levels and steps from 1 to 10. The arrangements of grades and steps correlate to different levels of independence and production quotas. Employees are advanced to the next step when they can work at the production level of about 107%. They are said to be in between GS levels. Examiners can work at salaries between GS levels for years if they don't meet production goals regularly. It is only when employees meet all deadlines on time and with few errors that they advance through the GS levels. New hires with bachelor degrees start at GS 5, 7, or 9, depending on their level of education and experience prior to the job. The highest GS level on the chart represents a Supervisory Patent Examiner (SPE), who is the direct supervisor to approximately 15 Patent Examiners. The SPE manages an "art unit," which covers a specific group of technology, and works with junior and primary Examiners. Many SPEs are Hiring Managers or are in some way involved with the USPTO recruitment process. The ability to progress quickly through the USPTO is attractive, because an employee's salary can double and even triple with only a few years of work. In addition, once a Patent Examiner reaches GS-9 and has the ability to review patents without as close supervision, he or she is able to bring a laptop home in order to complete overtime.

Ayaz Sheikh, a SPE, explained the ideal progression of a junior examiner to a SPE at the USPTO. Most junior examiners start out at GS-7 Step 10 if their GPA is above a 2.95 and GS-5 Step 10 if they fall below a 2.95. Within the first year of employment, each Examiner is capable of earning two promotions, bringing a GS-7 up to a GS-11 or a GS-5 up to a GS-9. After that first year, it takes a year for the next promotion. If a GS-7 follows the ideal career path, (s)he can become a GS-13 after only three years of service with the USPTO.

Signatory authority is a Patent Examiner's ability to sign off on his or her own patent application. Once an Examiner becomes a GS-13, (s)he works for six months before being tested for Partial Signatory Authority (PSA). The test entails thorough scrutiny of at least 17 patent applications completed during a six month period by a given Patent Examiner. If there are no errors the Examiner gains PSA and is then eligible for a promotion to a GS-14. To gain Full Signatory Authority (FSA) an Examiner with PSA must work for another six months and be reviewed again for errors. Upon successful

completion of 17 cases, the Examiner advances to GS-14 and gains FSA. Only then can the Examiner apply to for a SPE position, for which they must be selected.

The Examiners this team has interviewed are those with five to ten years experience, and they have all progressed through the ranks of the office rather quickly. Christian LaForgia, who is currently a GS-14 Examiner, has been working with the USPTO for five and a half years and started as a GS-7 Step 10. Therefore, he has seen a raise of over \$40,000 in less than six years of employment. In addition, the members of the focus group agreed that the USPTO career ladder was attractive. Brochures and the USPTO web site lack a thorough explanation of the career ladder and the avenues to earning promotions. Eric Hug, a GS-14 Examiner, said that the progression from GS-11 to 14 was easier than he expected and that he would like to have known about the advancement opportunities before arrival at the USPTO. In addition, new hires have revealed that they were interested in learning about career paths during their job search.

2.5 Skills and Traits of an Examiner

Patent examination is unique because there are few jobs in the private sector that are similar to the nature of the work at the USPTO. Therefore, there are particular skills that are necessary for Examiners to succeed. Unlike most engineering design and manufacturing jobs, Examiners deal with the analytical side of science. A study performed in 2004 by TMP Worldwide revealed that time management was the top skill that Patent Examiners felt was necessary to succeed at the USPTO (TMP, 2004). This was followed closely by logical analysis, technical knowledge, and decision-making skills.

Patent applications are time consuming and, if an Examiner procrastinates, he or she can easily fall behind. One SPE, Tariq Hafiz, said that Patent Examiners who fall behind in their work usually find it extremely difficult to catch up and meet deadlines. Each work period, which is two weeks (referred to as “bi-weeks” at the USPTO), passes so quickly that Examiners must have the time management skills to stay on top of their production. Also, independence is important because the Examiner reviews the prior art and writes the office actions independently. The SPE is there to help an Examiner, but is also busy. Therefore, it is important that an Examiner can make decisions on his or her

own. Many SPEs laughed when talking about decision making skills, because they agreed that candidates who can not decide which meal to order at a restaurant could never work as a Patent Examiner. Although this is an exaggeration, Examiners must have the ability to decide whether a patent application is patentable or not, and move on to the next case.

Two POPA Union Officials said that the ability to compartmentalize is another necessary skill. Examiners will have numerous patent applications on their desk at one time and, as a result, have to be able to focus on many technical issues at once. Jeff Pelligrino, an Examiner, warned that reading and writing are two skills that Examiners must have to meet production needs. Furthermore, in this profession technology meets law and, therefore, it behooves an Examiner to have some interest in the law and not be intimidated by patent attorneys. However, the extensive training at the beginning of their career should equip the Examiner with a lot of the technical and legal knowledge needed on the job.

Another interesting study performed in the TMP survey was meant to find the ideal USPTO employee traits. By conducting twelve interviews with executives and SPEs, three focus groups, and one online survey, TMP was able to gather enough data on the Patent Examiner position to develop the USPTO “gene”. The list of characteristics or traits that make a successful employee included:

- Thrive on routine
- Independent, but loves certainty and security
- Respects/seek/establishes common sense boundaries
- Efficiently meets production goals
- Avoid extremes
- Tight sense of community
- Sense of rectitude: rules are rules (TMP, 2007).

The analytical, independent nature of the work fits those who are independently motivated and able to make quick, educated decisions about patent applications. In addition, the fast-paced environment of the office and need to multi-task forces employees to manage their time well. The candidates with these traits should be heavily targeted by the USPTO in its recruiting efforts. Therefore, the USPTO needs to publicize

the need for these skill sets and make sure that the qualified candidates are applying to be Patent Examiners.

3. Retention Rates

The employment problem at the USPTO is two fold: recruitment of 1,200 Patent Examiners per year and retaining these employees for at least three to five years. The Government Accountability Office (GAO), which is responsible for the auditing and evaluating government programs and activities, wrote a Report in 2007 to correlate the relationship between hiring efforts and the patent application backlog. In the report, a web-based survey of a stratified random sample of 1,420 USPTO Patent Examiners was conducted with an 80 percent response rate. The Report states that the attrition rate, which in 2007 was 8.4% “has continued to significantly offset USPTO’s hiring process from 2002 through 2006” (GAO Report).

3.1 Job loyalty

“Tech Employees Jumping Jobs Faster” by Rachel Konrad says that the retention problem is not unique to the Patent and Trademark Office. In this article from CNET News, Konrad reported that “human resource experts agree that employees in the technology industry get itchy for a new job when they hit the 18-month mark with their current employer.” Previously, workers were valued and respected for the amount of loyalty they placed in a company, but nowadays tech savvy employees are in high demand. In a January 2007 report by an online job listing service called JobTrak, 78% of students and alumni with a technical background say that they “plan to stay with their first employers for no longer than three years” (Konrad, 2007).

This is also reflected in the USPTO exit survey data, which was given to the team by Personnel Psychologist, Scott Nier. The data show that of the employees that do leave, most do so within the first three years of employment, with the biggest exit in the first year. Engineering and science grads prefer to “build up their résumés with multiple employers and a variety of positions” as opposed to “working up the corporate ladder at the same company” as their parents’ generation might have done (HR Exit Survey, 2007). Konrad stated that employees now think differently about their job and employment.

Tech employees believe that the “only way to move up is to move out” and if they stay in one company for too long, they will acquire a reputation as a “deadwood” or “lifer.” They fear being categorized as “people who hang around because they are too lazy or not talented enough to receive job offers or cold calls from desperate headhunters” (Konrad, 2007). There is a clear shift in the value placed on holding a steady job and being a reliable employee.

A career at the USPTO is a good resume builder and many employees see it as a starting point for other career paths according to the GAO Report. This problem has been coined in the Report as the “millennial problem.” The work experience gained at the USPTO is valuable for intellectual property law firms. Through the 8 month training period at the Patent Training Academy and working at the USPTO, employees gain valuable information about: what a patent is; what is patentable; the correct format and language used in a patent; limitations of a patent; the patent application process; and patent law. Therefore, many employees at the USPTO are specifically recruited by law firms where they work as Patent Agents, on a job that is not based on production.

3.2 Retention at the USPTO

Although the USPTO has been able to meet its hiring goals over the past few years, the total patent examination force has not increased greatly, because many chose to leave. From 2002 through 2006, the USPTO hired 3,672 Patent Examiners, but 2,028 Patent Examiners either left the agency or moved to other positions. Therefore, in theory, the USPTO only gained 1,644 new Examiners over the four-year period. Over the last five years, there has been one Patent Examiner lost for every two who were hired (GAO Report).

In the 2007 Fiscal Year, 1,215 Patent Examiners were hired, putting the total number of Patent Examiners at 6025. However, in the same year, 509 Patent Examiners voluntarily left the USPTO. This is an attrition rate of 8.4%. In the first three-quarters of the fiscal year, 359 Patent Examiners from the USPTO voluntarily left the job. Out of the 359 employees who left, 112 (31%) participated in an exit survey. This survey helped break down the specific reasons employees chose to leave the job and the degree of importance of each factor which contributed to their decision to quit the job. The results

of the survey are summarized in Table 4 below. The primary reasons for leaving the Patent Examiner position were: nature of the work, personal circumstances, work/life balance, management, work culture/environment. Each of these reasons will be broken down and analyzed in the following sections.

Table 4: Reasons for Leaving

Primary Categories	Cumulative (n=112)	
	% Citing as Reason for Leaving **	% Citing as #1 Reason for Leaving
Nature of Work	60%	20%
USPTO's Culture/Environment	41%	6%
Work/Life Balance	37%	14%
Management	32%	13%
Career Advancement/Development	29%	8%
Personal Circumstances	28%	16%
Career Change	21%	8%
Compensation/Benefits/Performance Recognition	20%	5%
Retirement	9%	8%
Top Reasons are in blue		

** Because respondents may give more than one reason, percentages add up to more than 100%.

Source: USPTO HR Exit Survey, 2007

3.2.1 Nature of the Work

The primary reason for leaving the Patent Examiner position at the USPTO was categorized as the nature of the work. Sixty percent of those polled in the exit survey cited it as a reason for leaving and twenty percent cited it as the number one reason for leaving (Table 4). In the GAO Report, 52% cited the agency's production goals as a reason they would leave. The production goals allow Examiners less time to complete cases as they move up the GS levels. One Patent Examiner who participated in the exit survey said that the production was "too much for me when so much quality was also expected. It is difficult to strike a balance between the two, so production suffered. I was tired of coming in on the weekends to finish things."

The team talked to Robert Budens, the President of Patent Office Professional Association (POPA), which is the union organization that acts as an advocate for the Patent Examiners. He said that the production quota system is the biggest reason for Patent Examiner dissatisfaction with the job, because it causes too much stress. In the 2007 GAO report, union officials stated that the “attrition can be primarily attributed to the insufficient amount of time provided to Patent Examiners to meet their production goals. Moreover, to meet their production goals, the majority of Patent Examiners had to work substantial unpaid overtime in the last 12 months, while many others worked while on annual leave. On the other hand, not everyone dislikes the production system. In fact, many of the Examiners interviewed like it, because the workload is always predictable. Others said that they didn’t think it was hard at all to keep up with the work requirements. One reason may be that the time allotted per case differs per technology and was established back in 1970. POPA asserts that technology has significantly advanced since then, making it more difficult and time consuming to examine, which the production rates do not reflect. This has led POPA officials to lobby on Capitol Hill for the re-calculation of production goals but unfortunately, change is slow.

Patent Examiners are placed into art units and fields depending upon which areas have openings. Sometimes, they are placed in art units that do not match their technical field of expertise, because there is a greater need to fill the PE positions in that particular area. This may cause Patent Examiners to become disinterested in their work and not feel motivated or enthused enough about the topic to want to work long hours on it. Patent Examiners become experts in a particular technology and deal only with cases that pertain to it. Although they become experts in this one field, after a while, it becomes repetitive and employees start to feel that the job is not utilizing their skills or abilities.

Often, employees begin work at the USPTO not understanding what the work entails. Of the current Patent Examiners working at the USPTO, only 28% said they were doing the type of work they expected to do when they were hired (TMP Survey, 2004). There may have been a miscommunication before hiring, or perhaps the employee did not research the job well before hand. Forty percent of those polled in the exit survey cited that they were not the right fit for the job, and this caused them to leave. The job at the USPTO is unique, and people may not fully grasp what they are getting themselves into.

It is not a typical engineering job, which places focus on innovation, creation and design. As stated by SPE Field, “the nature of work is more like research engineering as opposed to hands on engineering.” Patent Examiners analyze and examine the engineering technology. The GAO report also found that the nature of the work at the USPTO does not correlate with the working styles of most Patent Examiners with engineering degrees, because they “are looking for more ‘hands-on’ experiences” (GAO Report). Therefore, it is important to accurately describe the job, and avoid the loss of people due to a lack of a good fit between the employee and their job. People with the skills, traits, and work ethic necessary to thrive in the Patent Examiner position will not feel overwhelmed by the nature of the work and will not quit as readily. It is therefore important for the USPTO to hire people who have those skills and traits, as discussed in section 2.5. In order to deal with the nature of the work, Patent Examiners must be independent workers, decision-makers, organizers, and must have a good knowledge of the technology.

3.2.2 Personal Circumstances

The second primary reason for leaving was due to personal circumstances. Sixteen percent of those polled said that they were leaving due to relocating and going back to school (graduate and law school) (Table 4). The geographic area around the USPTO is expensive. In 2005, the average cost of a single family home in Alexandria, Virginia, was \$ 490,700 (City Data, 2006). Some employees combat the high cost of housing in the surrounding area and traffic by moving farther out into the suburbs, or to cities like Baltimore. However, then employees complain that it takes too long to get to work. The GAO Report also cited the area and cost of living as a contributing factor to USPTO attrition rates.

The USPTO has tried to alleviate some of these problems through the hoteling program, lap top program, flexible hours, and tuition reimbursement. However, these programs and opportunities are not available to new Examiners, and only become available after working at the USPTO for two-three years. The highest attrition rate is among new patent Examiners, which these programs are not helping to retain.

3.2.3 Work/Life Balance

The third primary reason cited for leaving was the work/life balance. Fourteen percent cited it as the number one reason in the Exit Survey (Table 4). Of those, 79% said that they worked too many hours per work period and didn't have time for anything but work. These Patent Examiners "had to put in unpaid overtime" in order to complete their work, to meet production goals and keep their jobs. Some found it hard to have a high quality of life outside the job, while working overtime to maintain the goal production levels.

This category reflects the complaints of those who did not like the production-based system at the USPTO. These employees were not able to complete the work during regular work hours necessary to keep their job and meet their production goals. In order to finish, they needed to work unpaid overtime and weekends, which lowered their quality of life. However, if a Patent Examiner finding the progression of the promotion and production scheme to be overwhelming, they may elect to stay at a certain GS level, and only work at 95-100% production in order to maintain that level, and stunt their career progression. For example, a Patent Examiner could elect to stay at a GS level 9 for a longer period of time and naturally, as they get used to the job, and learn the technology. They will become faster at the job, and the production goals will no longer seem daunting or impossible.

The Patent Examiners who are able to complete the work in the necessary amount of time do not need to work overtime. In addition, they are less stressed about the job and therefore are able to increase their quality of life outside work hours and the USPTO.

3.2.4 Management

The fourth primary reason for leaving was dissatisfaction with management. Thirteen percent cited it as the primary reason why they left (Table 4) and of them eighty percent said it was their supervisor with whom they were dissatisfied. Many felt that their supervisor was not personable and did not have the people skills or communication skills necessary to be in a position of management. The supervisors were also charged with treating Patent Examiners unfairly, and showing no respect or gratitude for the work being done.

There are many reasons that Patent Examiners may feel dissatisfaction with the management, but there are always two sides to a story. Fortunately, since this was cited as the fourth reason, the problem with management is not alarming.

3.2.5 Work Culture and Environment

Another important aspect of the USPTO that added to the attrition rate was the work culture and environment. Forty-one percent of those surveyed blamed the culture and environment for their dissatisfaction with the job (Table 4). They felt that the people at the USPTO had low morale, that there was too much emphasis on production, a lack of communication among employees, and a lack of social and non-work related interactions among employees. One employee surveyed stated that they “would like to have more direct interaction with coworkers, supervisor and client.” Unfortunately, part of being a Patent Examiner is working independently. However, these employees may not have taken advantage of the many clubs and social organizations found at the USPTO, which positively add to the work culture and environment.

In order to implement an effective recruitment and hiring strategy, the retention and attrition rates at the USPTO must be closely examined. Although the problem of retaining highly qualified engineers and scientists is not unique to the USPTO, the number of Examiners leaving within the first three years of employment accumulates to a great deal of time, money and human capital loss for the USPTO. Examiners leave due to the nature of the work, personal circumstances, work/life balance, upper level management and work culture/environment. Examining and analyzing the reasons behind each will help the USPTO implement solutions to alleviate the problems, and lower the attrition rates.

4. Recommendations for the Web Site

In order to learn how to design a career web site for engineering and science college students, the team talked to two web developers and representatives from a recruitment advertising company. Unfortunately, these sources had few specific suggestions. The literature review provides supplemental data.

4.1 Content and Aesthetics

According to Jesse Perry, a web developer for 12 years, Internet users tend to skim web sites. He says that “if people can’t find their way on the site, they won’t come back.” Therefore, it is important to group information logically and display the most important information, like the menu, more prominently. Consequently, the amount of text per page should be limited leaving it up to the reader to link deeper for more information.

Studies discussed in the literature review have stressed adding extensive detailed information about the specifics of the job, the salary, the company culture and the benefits. The WPI seniors said that they would like to see information about these topics as well when researching potential employers (see Table 5). Therefore, employee testimonials could be used, which would appear throughout the career site advertising the perks of the job along with a picture of the employee. If a wide variety of photos are used, the diversity of the work force is presented at the same time. However, the career site should not only be promotional in nature. Nier, the Personnel Psychologist and Shevlin, from HR at BAE Systems, agreed that Realistic Job Previews (RJP) are necessary to inform applicants of the true nature of the job. This is important, because it has been proven help decrease attrition (Allen, 2007 and Cober, 2007). The team therefore interviewed Patent Examiners to talk about their jobs and the aspects they liked and disliked. The most important issue Examiners had with their work was the production quota system and the fact that they work by themselves for the greater part of the day. Thus, the RJP should include detailed information regarding both. Perry also advised that young engineers and scientists are technical people and like to see technical information on a web site. The job description lends itself to technical details and specifics on some of the technology examined in the different Technology Centers should be provided. For example, it may be interesting to see some of the patents that were approved in the TC.

Table 5: Results of WPI Seniors Survey

3. If you researched a prospective employer, please rate on a scale from 1 to 5 how important each of the following pieces of information were:						
	Irrelevant %	Not important %	Neutral %	Important %	Very important %	Rating Average (scale 1-5)
Salary	2.2	0.7	10.9	46.0	40.1	4.21
Benefits	0.7	2.2	10.2	45.3	41.6	4.25
HR contact information	2.9	12.4	44.5	27.0	13.1	3.35
Detailed job description	0.0	1.5	19.0	44.5	35.0	4.13
Culture of the company	2.2	6.6	21.9	37.2	32.1	3.91
Information regarding diversity	38.0	27.7	21.9	9.5	2.9	2.12
Attraction and entertainment in the area	13.2	24.3	29.4	23.5	9.6	2.92

Source: SurveyMonkey, 2007 (modified)

Besides text, the web developers also agreed that graphics in the form of photos and video should be used to appeal to college students. The team came across the high energy video “Extraordinary Innovations” in the media lab at the USPTO, which ties extreme sports to patents. This would be an excellent video to put on the career site, especially as a pod cast. Other suggestions are to display fun and interesting examples of patents, and a link to the patent searching database to get an idea of actual applications Examiners use.

Another feature to add to the site is a compatibility test to help a job seeker determine whether the job is a good fit. Jones of HR was enthused about the idea of a screening test, because it would weed out some of the unqualified applicants and cut down the number of job applications to review. On the other hand, the test may deter or preclude qualified candidates. Professor Robert Norton from WPI related a story regarding a Procter & Gamble Co. screening test. The test was a prerequisite for getting

an interview and top WPI students, who had successfully interned at P&G, could not pass the test. This problem is circumvented if the test is voluntary and the applicant does not actually submit answers. Merely, the applicant views several multiple choice questions regarding the Examiner position and sees how his or her answers match that of an ideal candidate. Naturally, an expert on psychology would have to be involved to develop the questions.

The team also wanted to know what features the WPI seniors would like to see on the web site. They answered that the site needs to be nicely organized, easy to navigate, and there must be an option to apply online (See Table 6). Apparently, usability is more important than the aesthetics of the web site.

Table 6: Results of WPI Seniors Survey

4. If you used or were to use a prospective employer's website, please rate on a scale from 1 to 5 the attributes that were or would be important to you?						
	Irrelevant %	Not important %	Neutral %	Important %	Very important %	Rating Average (scale 1-5)
Nicely organized	0.7%	0.0%	10.9%	43.1%	45.3%	4.32
Ability to apply online	1.5%	5.1%	13.9%	34.3%	45.3%	4.17
Ease of navigation	0.7%	2.2%	7.3%	40.1%	49.6%	4.36
Design (colors, fonts, images)	7.3%	24.8%	37.2%	26.3%	4.4%	2.96
Compatibility test	10.2%	18.2%	32.1%	24.8%	14.6%	3.15

Source: Survey Monkey, 2007 (Modified)

TMP Worldwide used a software program to see when Internet surfers visited the web site, how long they stayed, from where they were coming and how often they visited. Accordingly, they found that the first or main page of the career site is visited the most and therefore should include as many of the relevant details as possible. This would include the main menu, brief description of the USPTO and the job, and the steps of the application procedure. Between August and October of 2007 the career site received a

total of 296,448 hits. During these three months, most of the visitors came via the main USPTO page and 25,966 went directly to the career site (see Table 7), perhaps because they had previously bookmarked the page.

Table 7: Referred from other sites

Site → http://	# Of Referrals
http://www.uspto.gov/	37,448
Direct Traffic	25,966
http://usptocareers.gov/	11,335
http://uspto.gov/	3,041
http://www.usptocareers.gov/	2,926
http://www.google.com/	2,586
http://ip-updates.blogspot.com/	1,277
http://jobsearch.usajobs.opm.gov/	605
http://www.usajobs.opm.gov/	582
http://ptoweb.uspto.gov/	442

Source: TMP Worldwide. (2007). “Web trends summary report.” August 2007 – October 2007, usptocareers.com.

The team looked at career sites of Fortune 500 companies which hire engineers and are located in the vicinity of the USPTO to get ideas for the career site. The team made subjective observations of the sites of companies like Lockheed Martin, Dupont and Lucent Technologies, and noted what they found appealing and what they didn’t like (see Appendix 5). Web sites that contained too many links, buttons, text, and colors were only confusing. Other sites were too simple and did not contain enough information. Most companies used employee testimonials, which had a positive effect. Lockheed Martin showed videos to capture testimonials and Dominion Resources even had an intern interview taped. These videos were interesting and fun. Also, interview and resume tips and a possibility to chat to a recruiter online were considered attractive features.

Perry pointed out an article by Matt Brown (2007) on the Adobe web site regarding web design. The article recommends that the title of the page should be explanatory of the content so that when bookmarked, the entry in the bookmark menu is self-explanatory. For example, “USPTO – careers.” Then, a sentence should be added at the top of the web site that tells the visitor what he or she will find on the page. The article also had helpful suggestions on usability, which will be discussed next.

4.2 Usability

Perry, Galotti, and Brown (2007) offered recommendations to make a web site easier to use. For example, the menu should be displayed on the left as a bulleted list, because that is where users expect to find it. Furthermore, there should always be an option to search the entire company site or just the career site. A consistent look or design is also considered to be less confusing and easier to navigate. Unfortunately, the actual job search is hosted on USAJobs, which looks and feels different from the USPTO web site. However, there is an advantage to this, since job seekers looking for a government job know to go to this site, thus giving the USPTO more exposure. A web page should also provide a printer-friendly option, so that the printed copy does not include the menu and other irrelevant banners and contains only the relevant information.

Galotti also suggests making the web site cross-browser compatible. Internet surfers use different browsers and therefore a web site will load and look differently for each. Also, the banner at the top of a page should bring the visitor back to the main page. This is what people expect and it would be confusing if it didn't.

The current USPTO web site contains a lot of information and many Examiners have complained about the usability of the site. Often, they can't find certain information. Making a simpler career site with just enough information on a page with the option of linking to a deeper page to read more will solve this problem. The menus on the left should always be the same and available on every page. This way, visitors can choose what information they want to see and how much. If the topic does not appear in the menu, there should be an option to search for it on the site. This will ensure ease of navigation and inform visitors satisfactorily.

5 Outreach Methods

In order to recruit 1,200 new Patent Examiners each year, the USPTO must tap into every possible resource and opportunity. Hiring qualified engineers and scientists is a difficult task, because the demand for them is so great. In the book, *The World is Flat*, Thomas L. Friedman claims that the U.S. is falling behind in producing engineers compared to the rest of the world. According to Friedman, math and science are not emphasized in primary school, and eventually this will hurt the US economically. In

order to reach the hiring goal, the USPTO must strengthen its partnership with universities and look for new and innovative ways to recruit scientists and engineers.

5.1 On-Campus Presence

According to Sally Phelps, the Director of Post Graduate Planning at Franklin W. Olin College of Engineering, it is important for an employer to establish a “consistency of presence” on the campus, and show students that the company is invested in the education and progression of potential employees. Companies show consistent presence and interest in students at Olin by holding 1 to 2 hour information sessions. They provide food, drinks, and other free give-aways, while talking about their company and answering questions. Phelps believes this is a wonderful way for the students to get to know potential employers, and for employers to increase name recognition, establish credibility, and recruit potential employees. Microsoft went as far as providing some funding for the construction of a building at Olin College. Phelps also said that many employers set up resume builder workshops or give out scholarships to improve their corporate image, and corporate employment image.

Similarly, for the seventh straight year, students at the College of Engineering at the University of Texas, “ranked information sessions as the number one recruiting practice” (U.Texas, 2007). According to the University of Texas Engineering Career Assistance Center, another way to develop a close relationship with students is by presenting a topic of interest to a student organization (U.Texas, 2007). Other sources, such as Sheikh, a recruiting SPE, and Pat Perillo, Director of Human Resources at Bose Corporation, have suggested establishing a partnership with surrounding universities to develop a class on IP. The incorporation of such classes in engineering programs would increase knowledge of IP and stimulate interest in the USPTO. To facilitate this process, HR officials think that the USPTO should hold seminars and invite engineering professors to learn more about intellectual property rights and patents so they can teach their students. Career fairs and college radio stations are two more ways to further university relations.

5.1.1 Career Fairs

The team spoke with Amy Shevlin, Director of Human Resources at BAE Systems, about the importance of career fairs in the recruitment process. She said that it is critical to staff the job fair tables with alumni and recent graduates from other schools, because college students will find them easier to approach and talk to about the job. Phelps agreed. It can be daunting for college students to walk up to a booth. Many employers are present at career fairs, so it is important to make the booth inviting in order to attract the students. Shevlin pointed out that give-aways, like DVDs about the company, or Ipod raffles are good ways to attract interest. The USPTO actively attends career fairs, but may find it useful to implement some of the suggestions from Shevlin into their current career fair program. Staffing the fairs with recent graduates or alumni would certainly appeal to the students.

5.1.2 College Radio Stations

The USPTO could benefit from targeting campus radio stations within the area surrounding Washington, D.C. There are at least seven college stations in Maryland and Virginia. For example, the University of Maryland, Virginia Tech, and George Washington University are all nearby. GWU runs a station called WRGW: GW Radio, which has had previous relationship with the USPTO (WRGW, 2007). The GW Radio station is popular because it plays new age music and broadcasts GW sports games. Like many radio stations, it gets its revenue from advertisements, thus looking to companies or agencies like the USPTO to buy air time. Ideally, the ad should be geared towards students with particular degrees in the areas the USPTO is recruiting to optimize results.

In addition to radio ads, GW Radio offers free “podcast” feeds, which are sample videos that Ipod owners can download to their mp3 players (WRGW, 2007). Ipods are the number one selling mp3 player and the podcasts are a widely used technology (Newton, 2005). The USPTO could develop a podcast that is exciting for college students in order to stimulate interest in the organization. Using campus radio stations for advertising will help the USPTO to reach out to college seniors. These stations usually play music that entire campuses can enjoy and, therefore, a wide variety of

students listen to the stations. By targeting colleges in the area, the USPTO can increase its name recognition to college seniors, who won't have to relocate.

5.3 Co-op Program

A popular trend in university education is the integration of a real world working experience with traditional education. Universities such as Northeastern and the University of Cincinnati have well-established co-op programs, in which students work for a semester in their field of study. This gives students a hands-on learning experience and exposure to working in a professional environment. Employers learn how well they perform and whether the student fits in with the company. Often, a company may choose to extend them an offer upon graduation. This preliminary work and training period can reduce turnover and training costs for potential employees. It can be called a six month long interview and evaluation process. The employer also gains greater visibility on campus, through returning co-op students. The HR directors from Bose and BAE Systems, and Phelps from Olin College all said that co-op programs are a good way to recruit and hire students. In a survey of Cornell graduates from 2007, 9% of students found their job from an internship, and another 9% of students found their job through a co-op program (Cornell, 2007). Similarly, in a 2006 survey of engineering graduates from Georgia Tech who participated in a co-op program, 19% said they accepted a position with that employer upon graduation (GaTech, 2006).

It is difficult to develop a co-op program at the USPTO, because the Patent Examiner position requires an eight-month training period at the PTA. However, one Patent Examiner suggested that student employees could be used in a co-op program to classify patent applications which come in into the different TCs and, more specifically, into the different art units. Another three Patent Examiners suggested that students could use the software and search databases to search for prior art (articles, posters and patents, etc.), which the Patent Examiner uses to compare to submitted patent applications. Also, one of the Patent Examiners said that interns could write summaries of the references.

The Patent Examiners said that the aforementioned aspects of their job do not require a significant amount of training, and that a co-op program would be a symbiotic relationship for both student employees and the USPTO. Students hired after a co-op

program will already have an initial training period and a whole semester worth of working experience, thus they might be less likely to leave due to the nature of the work.

5.4 Internet Recruitment

TMP Worldwide has been working with the USPTO for the past five years to create their career recruitment web site and expand on the recruitment strategy of the Office. They recently suggested that the USPTO look into other modes of advertising and recruitment. One of these methods is MTVU, which stands for Music Television University. MTVU is a program set up by the popular adolescent television station MTV to help college students find interesting jobs upon graduation. It reaches a young crowd through a web site (mtvu.com). MTVU selects 11 jobs per year to highlight on their web site. Each job is explained in a four-minute long ‘day in the life’ of an employee, which is in video form on the MTVU site. Although TMP employees stated that there is roughly a \$40,000 fee associated with the video, MTV reaches a wide audience of college age students, and the investment could be worth it. The MTVU program could add college-age appeal to the USPTO as an employer, and would help recruit and hire recent graduates. However, the USPTO is bound by strict federal regulations and MTVU requires complete control of the video. Both parties must therefore agree on the conditions for the making of the video before filming, if the USPTO gets chosen at all.

TMP also suggested a new type of virtual job career fair called Second Life. Second Life is a virtual world, in which one carries out the same daily activities as in the real world, but on the computer. TMP recently set up a career fair on their island in the Second Life virtual world. Prospective employees are able to sign up for the career fair, enter into the virtual TMP building, “chat” with employers, and submit their resume. During the second TMP career fair via Second Life, over 300 prospective employees virtually attended, submitted resumes, and were interviewed. HR from the USPTO thought that Second Life might be too complicated, but similar ideas, such as virtual job fairs and interviews via web cam, could be useful tools in finding qualified professionals. Since this is new and growing, there is not much evidence or data that analyzes the effectiveness of Second Life in recruitment. However, new and innovative ways of outreach would show that the USPTO is at the forefront of new technology.

Another important outreach option is social networks. Popular examples are MySpace and Facebook. This is one new “way employers have tried to better connect to their target audience” (MacNeil, 2007). The social network Facebook is the number one site visited among men and women of the ages 17-25 (Goldberg, 2007). “Eighty percent of students at US universities have registered profile pages” on Facebook, says DiMicco (2007). As of November 2007, there were 55 million registered Facebook users worldwide (Facebook, 2007) and of these members, “84 % have a current school affiliation” (Dwyer, 2007). On the other hand, only 55% of MySpace users are currently affiliated with a school (Dwyer, 2007). Another important difference to note is that “members of Facebook demonstrate significantly higher trust in the site compared to other social networks” (Dwyer, 2007). Facebook has a significantly higher percentage of college age users than MySpace; therefore it is more valuable for the USPTO to look into Facebook as a recruiting platform.

There are two hundred fifty employers listing jobs on Facebook. Some of those include Nike, KPMG, Boeing, GE, Genentech, GlaxoSmithKline and AOL. Boeing “has advertised position[s] on Facebook” which shows they are “as technologically savvy as the students they’re looking to hire” (MacNeil, 2007). Facebook is a “new way to reach out to the college audience” (Rothberg, 2007) and many companies are utilizing it as a new recruitment strategy. There are options on Facebook to add job searching applications, such as Jobster. This application is a career network that connects employers and potential employees through Facebook. Registered Facebook users are able to register into “Talent Networks” according to their area of expertise, and be connected to employers in that specific field.

Ernst and Young (E&Y) is another example of a company using Facebook to recruit and hire college students and recent graduates. Every year, E&Y “hires more than 5,500 college students and recent graduates for internships and entry level career opportunities” (Rothberg, College Recruiter, 2007). In order to recruit that many candidates, E&Y has established a page on Facebook that contains information and discussion boards for interested students. On their profile page, there is information on career opportunities, E&Y inclusiveness, and corporate social responsibility. There also are links to important E&Y web sites, recent press coverage of the company, a question

and answer section and career tips. E&Y is currently connected with 5,100 Facebook users, and is able to communicate and reach out to these potential employees.

When trying to outreach and recruit large numbers of young employees in new and innovative ways, many companies have turned to social networking sites, which are popular for college age students. It is a cost effective recruitment tool, because there are no registration or maintenance fees and the USPTO could use this network to reach engineering talent pools from all over the U.S.

5.5 Universities

In order to recruit 1,200 new employees each year, the USPTO must recruit college students, and tap into the resource of graduating science and engineering majors. Currently the USPTO sends SPEs nationwide to college career fairs, to recruit students. According to data from Human Resources at the USPTO, Maryland, Virginia, and New York are the states where the most college graduates are hired by the USPTO. In 2006, the USPTO hired college graduates from 30 different states in the nation. The recruitment outreach budget dictates how aggressive and active the USPTO will be at college career fairs around the nation. Through previous history of hires according to school and state, the Human Resources Department has decided which schools have a history with the PTO, and which schools to visit for recruitment. Some schools which produce many hires for the USPTO are University of Maryland, George Mason University, Virginia Tech, City College of New York, Johns Hopkins University and Penn State University. Table 3 shows a breakdown of each university, and the number of graduates hired by the USPTO. All of these schools have a large student population, have large reputable engineering programs, and are geographically close the USPTO.

However, the USPTO can strengthen its recruitment strategy by analyzing and categorizing other schools, to recruit at the best schools for the USPTO to optimize their results. Jones of HR, Mindy Fleisher of University Outreach, head of the University Outreach Program, Director of TC 2100 Jim Dwyer, and Perillo, head of HR at Bose Corporation, stated some of the following characteristics as possible important criteria for target recruitment schools. Universities the USPTO recruits at should have a prior hiring history with the USPTO. The school should have a strong engineering department. The

strength of the engineering education is important, but the USPTO should also look into schools that emphasize the importance of written and oral skills. Patent Examiners must write a lot and converse with lawyers. Therefore, they must be able to communicate and write effectively. It may also be beneficial to look into schools with a strong commitment to public service. The USPTO might consider targeting engineering departments at universities with programs or projects that promote independence, critical and analytical thinking and decision-making. The USPTO has had great success with schools on the East Coast, particularly schools in the surrounding geographic area. When taking all of these criteria from the aforementioned sources, the team developed a set of seven categories to rank universities. The top 20 universities fitting the criteria were placed under the specific category. Schools that were present in multiple categories were highlighted and noted as schools worthy to establish relationships with (see Appendix 6). The seven categories were:

1. The top 20 Best Undergraduate Engineering Programs according to the 2008 *US News and World Report* rankings;
2. The top 20 Best Graduate Engineering Programs also according to the 2008 *US News and World Report* rankings;
3. The top 20 universities which award the highest number of B.S Engineering degrees according to the 2005 Profiles of Engineering & Engineering Technology Colleges;
4. The top 20 universities which award the highest number of M.S. Engineering degrees according to the 2005 Profiles of Engineering & Engineering Technology Colleges;
5. The top twenty colleges which the USPTO hires the most graduates from, according to USPTO HR data;
6. The top 20 universities in the nation devoted to National and Public Service, according to 2006 rankings by the *Washington Monthly*; and
7. The top 20 universities in the nation devoted to diversity through the campus community and education, according to *The Journal of Blacks in Higher Education* from 2002.

Schools that qualified under more than three out of the seven categories were highlighted with a different color. Cornell University, which in Appendix 6 has been highlighted in red, qualified in five out of the seven categories. Penn State, University of Michigan, and University of Illinois each qualified in four out of the seven categories. Table 8 lists the universities that qualified under the greatest number of categories, and the specific number of categories they fell under.

Table 8: Top Target Universities for Recruitment

School	Recruitment Value
University of Michigan	5
Cornell University	5
Georgia Institute of Technology	4
Penn State University	4
University of Illinois	4
MIT	3
Johns Hopkins University	3
North Carolina State University	3
Ohio State University	3
Texas A&M University	3
UC San Diego	3
UC Berkley	3
University of Texas	3
Stanford University	3

Source: Elaina Nichols, 2007

Perillo, from Bose, has extensive experience with targeting universities that produce students with the skill sets that Bose is looking for. She has found in her years of experience that students coming out of the top Tier 1 engineering programs, such as MIT, Carnegie Mellon, Cornell, and Penn State, are interested in engineering design, and are not the best fit for an analytical job such as Patent Examiner. However, she has found that lower tier engineering programs, or schools with a degree option in general engineering, produce students with a general interest in engineering and the way things work, and these students may be better suited for the nature of the work. Some schools that she mentioned which fit this criterion are Wentworth Institute of Technology, UMass

Lowell. Other schools that have established a General Engineering Degree are Dartmouth and University of South Florida. From her understanding of the nature of the project and the team's work at the USPTO, she stated that universities with strong pre-law programs or intellectual property programs would also be good colleges from which to actively recruit, particularly because the USPTO offers to pay for employees' law school tuition.

6. The Advantages of Working for the USPTO

Although the work is difficult, Patent Examiners are entitled to benefits from both the federal government and the USPTO. In addition, the culture and environment of the USPTO causes a fun work place, at which employees develop long-term friendships. This section describes some of the perks of working for the USPTO.

6.1 Benefits of Working as a Patent Examiner at the USPTO

As a federal agency under the US Department of Commerce, the USPTO offers its employees government benefits. In addition, the salary is enhanced to make Examiner compensation competitive with the private sector. This section lays out the benefits to which USPTO employees are entitled.

6.1.1 Federal Agency Benefits

The federal benefits which USPTO employees receive are:

- Paid overtime
- Health Benefits Plan
- Comprehensive Retirement Package, including the Thrift Savings Plan (TSP)
- 10 Paid holidays per year
- 13 Days of paid sick leave per year
- 13 Days of paid vacation leave per year
- Transit subsidy
- Job security

Examiners may work 40-50 hours of overtime at the USPTO every bi-week. They can choose to receive their regular compensation or "comp time." This is an incentive to

work more hours and increases production, giving the employees a chance to earn more money.

The Health Benefits Plan includes Health Insurance and LifeCare for USPTO employees. LifeCare is a comprehensive package for federal employees, which offers educational materials, parental assistance (such as birthing options), and child safety kits (USPTO Benefits, 2007). The Federal Employee's Health Benefits Program (FEHB) works with employees so that they can have their health care needs covered by a wide range of possible health plans. These plans can cover individuals or families, which includes spouses and children, up to 22 years old and unmarried. In addition, the LifeCare program assists employees with child care and financial issues. In fact, the USPTO campus includes a daycare center where employees can bring their children during work hours. Although the daycare is quite expensive, the office does aid its employees with babysitting while at work.

The federal employee retirement system is available to USPTO employees and provides a structured retirement system for these workers. Retirement is something that college-aged students don't necessarily think about, but is nonetheless an important benefit. The TSP is a retirement savings plan that is comparable to the 401(k) of the private sector, which offers employees savings and tax benefits.

One advantage that is especially pleasing to Patent Examiners is the amount of time off they receive. The USPTO allows 10 paid holidays per year for employees and 13 days of paid sick leave. In addition, each new hire starts out with 13 days of paid vacation time per year. After three years of service, this figure increases to 20 days and, once an employee has worked 15 years at the USPTO, they receive 26 vacation days. This is attractive since, as *Winning Workplaces* (2007) cited, "one out of four employees in the private sector do not have any paid time off, according to a new study by the Center for Economic and Policy Research."

A job at the USPTO offers security. Private organizations have to worry about their budget and funding, whereas the USPTO is self-funded through fees. In the focus group that the team conducted, new hires reported that they resigned from their previous job and applied to the USPTO in order to have a steady budget and for job security.

Although the federal benefits are not necessarily better than those offered at some private sector agencies, working at the USPTO provides employees with a good package.

6.1.2 USPTO-Specific Benefits

Bonuses that are USPTO specific include:

- Enhanced federal salary
- Recruitment bonus
- Flexible work schedules
- Law school tuition
- Laptops for overtime at home
- Hoteling
- Patent Training Academy (PTA)
- Business casual dress code.

Federal salaries are regulated through the Office of Personnel Management (OPM), which determines salary ranges based on specialization of federal jobs, and also cost of living around the work place. OPM has determined that a great deal of skill is necessary to perform Patent Examiner work. In addition, the cost of living around Alexandria, Virginia, is extremely high, and relocation can be difficult for new hires. Therefore, OPM has increased the pay rates of standard government GS levels by 30-50% for Patent Examiners, depending on the grade.

The salaries offered at the USPTO in combination with the incentives are competitive. Most Electrical Engineering graduates start at GS-7 Step 10, as long as their GPA is a 2.95 or above, and receive \$61,893 per year to begin (Table 9).

Table 9: Special Salary Rate Table

EFFECTIVE DATE: FIRST DAY OF FIRST PAY PERIOD BEGINNING ON OR AFTER: 01/01/2007

GRADE	STEP									
	1	2	3	4	5	6	7	8	9	10
05	38,435	39,716	40,997	42,278	43,559	44,840	46,121	47,402	48,683	49,964
07	47,610	49,197	50,784	52,371	53,958	55,545	57,132	58,719	60,306	61,893
09	55,518	57,369	59,219	61,070	62,920	64,770	66,621	68,471	70,322	72,172
11	63,885	66,014	68,144	70,274	72,404	74,533	76,663	78,793	80,923	83,052
12	73,191	75,631	78,072	80,512	82,952	85,392	87,832	90,272	92,712	95,152
13	87,036	89,938	92,840	95,741	98,643	101,544	104,446	107,348	110,249	113,151
14	102,850	106,278	109,706	113,134	116,562	119,990	123,418	126,846	130,274	133,702
15	120,982	125,015	129,047	133,080	137,112	141,145	145,178	145,400	145,400	145,400

Source: USPTO Career web site, 2007

This table displays the salaries for given government scales (GS) and steps within the USPTO. The average salary of an Electrical Engineering graduate from the University of Michigan is \$58,826 (UMichigan, 2007). Electrical Engineering graduates from the University of Texas receive an average salary of \$59,019 (UTexas, 2007), and EE graduates from Georgia Institute of Technology receive an average salary of \$58,160 (GA Tech, 2007). According to the National Association of Colleges and Employers, who assists college students in learning about potential employers, the average salary for 2006-2007 of an Electrical Engineering graduate was \$55,292 (NACE, 2007). Even if an EE is originally a GS-5 Step 10 (graduated with below a 2.95 GPA), he or she receives a salary of \$49,964 per year. This figure is attractive if the recruitment incentive is added, which is an additional \$7,543 per year for the first four years of employment, totaling \$57,507 (See Table 10). A recruitment incentive is paid to all recent hires at the USPTO and is issued over four years. The salary in combination with the incentive make the USPTO comparable to entry-level salaries in the private sector.

Although the USPTO does not offer any direct relocation assistance, they do provide new employees with assistance from LifeCare, who contact real estate and moving companies. In addition, the USPTO also offers a “recruitment bonus” for new hires, which is a series of installments that are paid over four years. Computer and electrical engineers are offered a greater incentive than other technical degrees, due to the current high demand for their skills. Table 4 below, represents the total recruitment incentive and the incentive payment per year for Patent Examiners.

Table 10: Recruitment Incentive Determination

Title	Grade	Step	Salary Offer	Total Recruitment Incentive Amount (Up to)	Length of Service Period (Years)	Payment Type	Incentive Paid Each Year of Service Period (Up to)	
Patent Examiner (Computer Engineering)	GS-05	10	\$49,964	\$33,772	4	1st Year – Lump sum payment 2nd thru 4th years – semi-annual payments	\$8,443	
	GS-07	10	\$61,893	\$35,152	4		\$8,788	
	GS-09	8	\$68,471	\$39,600	4		\$9,900	
Patent Examiner (Electrical Engineering)	GS-05	10	\$49,964	\$30,172	4		\$7,543	
	GS-07	10	\$61,893	\$30,812	4		\$7,703	
	GS-09	8	\$68,471	\$34,600	4		\$8,650	
All Other Patent Examiner New Hires	GS-05	1-10	\$38,435 To \$49,964	\$20,000	4			\$5,000
	GS-07	1-10	\$47,610 To \$61,893					
	GS-09	1-10	\$55,518 To \$68,471					

Source: USPTO Careers, 2007

Although the Special Salary Rates Table is attractive, new hires and current recruits have complained about the lack of explanation that accompanies the chart on the current web site. Candidates think that, since the table starts at GS-5 Step 1, they will start at less than \$40,000 per year. However, Patent Examiners who enter the office usually begin as either a GS-5 Step 10 or a GS-7 Step 10, depending on GPA and degree level.

Another bonus offered to Patent Examiners is the production bonus. Once a year, Examiners are eligible for this bonus if they have reached higher production goals than expected. Examiners who reach 110% of their goal receive a bonus that is five percent of their current salary. Similarly, 120% yields a seven percent bonus, and 130% yields a nine percent bonus. For example, a GS-9 Step 6 who reaches 122% of his or her production quota will receive a seven percent bonus, which is \$4,534. This bonus is

incentive for employees to go above and beyond the standards of work and to produce at maximum level.

Flexibility is a perk that seems to be attractive to all USPTO employees. An Examiner may work five 8-hour days between 5:30AM to 10:00PM or four days a week, working 10-hour days. Then there is the ability to take a laptop home for overtime and the hoteling program. The ability to take the laptop out starts at GS-9 when the Examiner is experienced enough to work from home. Once an Examiner has reached GS-13, he or she is also available for the hoteling system. The Examiner only has to work one hour per week in the office. There are speculations that the USPTO will be eliminating the one-hour requirement in the near future. It is undoubtedly nice to be able to create a work schedule to fit one's lifestyle.

Another advantage that the USPTO offers is its Law School Tuition Reimbursement Program, since many Patent Examiners begin working at the USPTO with the goal of becoming a patent attorney. In addition, much of the Examiner work involves dealing with attorneys. Therefore, the USPTO offers reimbursement for law classes up to 24 credits per year, over six years. The employee must have worked at least two years at the USPTO before he or she is eligible for this opportunity.

The Patent Training Academy (PTA) is also an attractive feature of the USPTO. Many job seekers like the opportunity for advanced training. The Academy, as explained in section 2.1, is eight months long and prepares Examiners for the process of examining applications. All seven members of the focus group agreed that a career web site should contain information about the PTA, since it is such an important tool in the growth of the Patent Examiner.

The business casual dress code is another perk that makes the USPTO an attractive employer. This makes the work environment comfortable and allows employees to choose from a variety of different clothing styles.

Furthermore, the ability to advance based on productivity is seen as a perk. If employees complete their work with respect to both quality and quantity, then they are given opportunities to advance. In addition, each US Patent contains the name of the Examiner who worked on that application on the front page, which is a public document. The above benefits deserve mentioning when attracting college seniors, because job

seekers are interested in salary and training, along with the flexibility that the employer offers and other perks.

6.2 USPTO Culture – Suggested Content for the Career Site

The career site should provide job hunters with information regarding life in Washington and at the USPTO according to HR and the literature. Therefore, the team obtained information that may be used for the career site.

Similar to a college campus, the USPTO campus contains a diverse group of professionals. Employees have many different backgrounds and nationalities. For example, Hug said that TC 1700 is diverse, since ten engineers with different technical backgrounds and work experience work together in his art unit. The different personalities and backgrounds of applicants who the USPTO hires help to establish a diverse working environment on campus and assures a mix of interesting and sophisticated co-workers. Students are not the only new hires; professionals from various industries leave their jobs to work with patents as well. The USPTO offers clubs with interest themes, cultural themes, and ethnic themes including different activities, such as trips abroad and ski-club activities. These organizations reach out to various groups of people. The literature review showed that diversity in the work place is important to advertise in order to attract minority candidates.

The participants of the focus group of recent hires explained that they have already become close with their classmates in the Training Academy and also co-workers in their TC. Examiners have reported that they attend happy hours at local bars with co-workers and plan weekend events with peers. For example, Christian LaForgia told the team that he and a group of co-workers played paintball together recently. Events can either be planned by co-workers or through the Patent and Trademark Office Society (PTOS).

The PTOS is a committee within the USPTO that organizes social events for the employees. The calendar can be viewed using the USPTO Intranet, to which only employees have access. The PTOS events include bar nights and tourist activities throughout the Washington area. In addition, the PTOS organizes many inter-office sport leagues, such as kickball, softball, and bowling. LaForgia informed the team that the

bowling league is quite competitive. Participants in the leagues range from new hires to retirees and each league is mixed gender. This society within the USPTO is a useful tool for Examiners because it places them in social situations with co-workers. However, information about the PTOS is difficult to find using the USPTO Intranet. The team searched the intranet and found little information about upcoming events with the PTOS. As an important social program, the USPTO should share more information about the PTOS and promote events to the Patent Examiners. With a strong social core, the USPTO could become an even more attractive employer. Employees who are happy with the work environment, are happy with their job, and may refer possible applicants to the job.

6.3 Living in D.C.

The nation's capital is an attractive place for college students, as the city is quite lively and contains plenty of famous landmarks. The availability of public transportation makes it easy to navigate throughout the city and areas of the neighboring states. National monuments, museums, theatres and cultural venues and famous buildings abound in downtown D.C. and other areas within the Metropolitan district. Various forms of entertainment are offered through sports, museums, theaters and concert halls in Washington, along with other exciting activities. Many areas of Washington itself are filled with college-aged crowds and even recent grads, who are the targeted audience in this project. The team has identified some attractive aspects of the city and described each one to show the excitement of Washington, D.C. Due to the USPTO's location in Alexandria, Virginia, the city of Washington can be used as an attractive marketing tool. Just eight metro stops outside of Washington, D.C., the USPTO is close to national monuments and the entertainment options in the nation's capital. For more information regarding life in Washington, see Appendix 4.

Recommendations

After almost four months of research and interviewing, the team has formulated a number of recommendations for the USPTO. First, there are recommendations for the college career site suggesting what content and design elements might be included. Then, the team has ideas for alternative recruitment strategies as well.

1 College Recruitment Web Site

The team has developed recommendations for the college recruitment site drawing from their extensive literature research and numerous interviews with experts and employees. Here are the results.

1.1 Search Engine Optimization

When people are using the Internet to search for jobs, it is important that the USPTO career site appears in the search results. The USPTO can register with search engines like Google, Yahoo, and Alta Vista. The engines will rank the career site according to key words. Words to think about are “job,” “career,” “engineer,” “science,” “scientist,” “government,” and “research.” In addition, the site will rank higher in searches if a link to the site is provided on relating sites. For example, links within the USPTO web site, USAJobs, and Career Development site of schools where the USPTO recruits.

1.2 Aesthetics

The team recommends a simple design that is consistent throughout the site, meaning that the colors and layout should remain the same. The current career site is hard to read in the team’s opinion, because the font size is too small, the site does not have a consistent design, and there is too much information per page. Therefore, they recommend making the font of the menus one size larger and changing the font of the body of text to one that has more space in between the lines. The different sections on a given page should look distinct and provide enough contrast. Studies have shown this is effective for recruitment purposes (Williams, 2004, and Chen and Wells, 1999). Photos

of a diverse environment should be prominently displayed, because they have been proven to positively affect minorities. Furthermore, college students like to see photos and flash videos. A video of the patent examination process might be included. The text should be broken up into short paragraphs becoming more specific as the reader goes on and the amount of text on each page should be limited, because if there is too much, visitors won't read it all. Also, the important information or message might get lost if there is too much text.

One area of the web site in particular that requires pictures of young engineers interacting is the "Examine the Possibilities" banner, which is on the first page of the college career site. Pictures that show young people will give the site a college feel and appeal to young applicants. In addition, pictures should be added to pages, such as "About Us" and "Work/Life Balance" to add some pizzazz. These images should include pictures of the USPTO buildings, images of young Examiners participating in activities, and interesting inventions that Examiners deal with. These images are effective in gaining attention from college students.

1.3 Usability

In order to direct traffic to the college career site, a link for "College Recruiting" should be prominently displayed on the main page of the current career site and, if possible, the USPTO main page. The menu should appear on the left side of every page within the College Recruiting site as a list displaying the following topics: College Recruiting Home, About Us, Careers in Patent Examination, Employee Benefits, USPTO Environment, Campus Events Schedule, Contact Us, and Comments. When moving the cursor over each menu option, the sub-headings should appear on the right of the main list. This happens on the main career page, but not on the other pages of the career site. The search option should give the visitor the ability to search either the entire career site or the entire USPTO site. The options at the top of the current career site, which appear on any USPTO web site are good, but there should be a printer-friendly option to print the page without the menu and banners. Furthermore, the site must be cross-browser compatible.

The application process via USAJobs is confusing, long and cumbersome. The team recommends there be only one page on the Career in Patent Examination page where students can apply and be directed to the page on USAJobs. The job postings should be more specific and preferably indicate the art unit the applicant is applying for. During the online application process there should be an indication of how far along the applicant is in the process and what actions are still required. At the beginning, it should be made clear that if the applicant has a resume ready he or she must apply through a different web page. In addition, the whole application process requires the applicant to enter a large amount of information causing the process to be prone to errors and making it lengthy. The team suggests that the amount of manually entered information be limited. When finished, a confirmation email should be sent to the applicant confirming the documents that were submitted electronically.

1.4 Content

The team has conducted a thorough investigation to determine the necessary content for a career web site. This section illustrates different options to consider when forming a recruitment site for college students. In order to display the USPTO in a realistic light, the team has added some suggestions regarding the nature of Patent Examiner work on the web site. In this section, the team has laid out the different themes for a potential menu on the site.

1.4.1 College Recruiting Home

As the first page that a college student will see on the site, “College Recruiting Home” should be the first option on the menu, which will appear on the left side of the screen. This page should contain a short message about the importance of patents, young employees at the USPTO, the different opportunities, and a brief overview of the benefits of the job. This message will help candidates see that the organization has the goal of hiring roughly 1,200 Patent Examiners annually and, therefore, there are plenty job opportunities. Next, this page could contain the video entitled “What did you do at your job today?” This video can currently be found on the front page of the uspto.gov web site and is a short, thirty second video clip about the USPTO. Instead of using the costly

MTVU program, this short video could be used to make applicants enthusiastic about working for the USPTO. The team suggests that it is voluntary to watch the video. Some people are annoyed or distracted by flashy videos that start playing as soon as they enter the page.

Lastly, the team recommends that a podcast be available on the first page of the college recruitment site. The team has viewed one video, entitled “Extraordinary Innovations,” which is an exciting fast-paced video clip and connects patents to extreme sports. Podcasts are videos that can be uploaded onto Ipods and are rapidly gaining popularity. A podcast will allow college students to view and share this interesting video.

1.4.2 About Us

The second menu option should be “About Us,” which will show a more in depth description of the USPTO as an employer. First, this page should include a quote from Abraham Lincoln, which reads, “The patent system added the fuel of interest to the fire of genius (USPTO, 2007).” This section will tell about the “who, what, when, where and why (five w’s)” of the USPTO, showing the purpose and location of the office. There is currently an “About the USPTO” section on the overall recruitment web site, which shows the five w’s, but is missing an exciting spin on the job. Therefore, the team recommends that the USPTO place an emphasis on the ability to view new, advancing technologies and also the chance for employees to change society by allowing or rejecting patent applications. Rearranging the current “About the USPTO” site to include information about these aspects will add flavor to the page and help students become excited about career opportunities at the USPTO. Phelps from Olin College said that students now are interested in “making the world a better place” and, therefore, highlighting the ability to affect technology advancements will be a powerful addition to the “About Us” section.

1.4.3 Career in Patent Examination

At this time, the USPTO career site includes minimal description of the Patent Examiner position and the course of a patent application. High retention rates show that Examiners leave or would consider leaving because they were not prepared for the nature

of work at the office. Therefore, the team suggests that the USPTO describe the career in a more realistic detail. The page “Career in Patent Examination” should contain a section about the patent examination process for all technologies, showing a general outline of the process a case goes through. This information may be extracted from Section 2.2 of the Results and Analysis (page 62). This menu option should be the first that contains sub-headings, which could read as follows:

- Patent Training Academy
- Meet the Employees
- Realistic Job Preview
- Technology Centers
- USPTO Compatibility Test
- Apply Online

These options will allow users to view different aspects of the job.

The USPTO *Patent Training Academy* section should show the extensive training offered for Examiners. Students show concern about the availability of training at potential jobs, so the USPTO can use their academy as an recruitment tool. Currently, there is a “Training” section on the USPTO career site, but it tells almost nothing about the academy that has been offered since 2006. Therefore, this description needs more detail and information about the length of the academy, the nature of the courses, and the patent examination which occurs in the academy. The Training Academy description in Section 2.1 of the Results and Analysis could be used on the web site.

As found on Fortune 500 company career sites such as Raytheon and Lockheed Martin, employee testimonials are personalized representations of a job, in which candidates can view first-hand accounts of a career. The USPTO should include *Meet the Employees* as a sub-heading because the team has found that some Examiners are quite enthusiastic about their careers and can be used to instill enthusiasm in others. These testimonials can either be displayed through videos, where Examiners speak about certain aspects of the job, or through text with a picture of the Examiner next to the story. Either way, the visual of an Examiner will help to personalize the interaction between the user and the site. The information that is projected in these testimonials should reflect interesting advancements that the Examiners have seen in their fields and statements that

highlight the USPTO as an attractive employer. During the time in Alexandria, the team was able to extract testimonials from four different Patent Examiners. Each of these employees gave their consent to be used on a web site and, therefore, their testimonials could potentially be used on the college career site (see Appendix 6).

The ***Realistic Job Preview*** page will serve as the best realistic portrayal of the Patent Examiner position. This section should tell users about the nature of the work, including the production system, researching aspect of the job, the reading and writing involved with patent examination, and the decision making skills necessary to complete office actions. Stressing production is important because 67% of Examiners cited production goals as the number one reason that they would leave the USPTO, while 63% of those who left in 2007 agreed that the nature of the work and the production quotas convinced them to leave. If employees learn about the production quotas before entering the work force and are satisfied with the system, then those employees will be more likely to stay and succeed. The web site should not contain information about the confusing formulas found in Appendix 3, but should show the importance of production and meeting goals. In addition, production here can be used as an recruitment method, since there is no competition for advancements. Section 2.2 of the Results and Analysis could be used to show the process of a patent application, revealing the true nature of work at the USPTO.

The ***Technology Centers*** page should describe the different Technology Centers (TC) to explain the organizational structure of the USPTO. Links to pages for each TC should follow, so the visitor can investigate the TC that he or she would like to learn more about. The TC-specific site should include the technology handled, message from the Director of that TC, and the breakdown of the different art units. These pages appear on the USPTO Intranet already.

The ***USPTO Compatibility Test*** will be helpful to screen candidates who do not possess the fundamental skills and traits that Examiners need. The team recommends that the USPTO either hire a professional to develop such a test, or work within the office to develop a screening system that works to filter out only those candidates who cannot handle a production-based system, independence, and rapid decision making skills. These screening tests have proven to be destructive, as Professor Norton from WPI says,

if they deter qualified professionals from jobs. Therefore, care should be taken when designing these tests. In addition, students believe that job compatibility test results may harm their chances of receiving a job. Therefore, this assessment should be created such that no answers will need to be submitted. Instead, a job searcher should be able to answer multiple choice questions presented and assess how he or she did using a key at the bottom of the page. The key should display the different levels of compatibility associated with the different selections. This option will eliminate the need to submit answers and make students comfortable when assessing their skills. Using a compatibility test will also help to decrease the number of applications submitted from unqualified candidates.

Lastly, an ***Apply Online*** option should be added under this section. Candidates will look under careers to discover how to apply for the job. The current page for applying will be useful under this sub-heading. To this page, a checklist of necessary forms should be included to keep applicants organized. The USAJobs site requires change to make it more accessible, as explained above in 1.2. In addition, it would be helpful to an applicant if the job postings specified the art unit or TC. Currently, there is only one general job description and candidates do not know for what position exactly they are applying.

In addition to the checklist, the USPTO could inform students that the application process is lengthy, but the interview and actual hiring processes are more efficient. The USPTO doesn't control USAJobs and, therefore, the office should warn potential applicants about the somewhat tedious period of applying. In addition, the Office of Personnel Management may want to approach USAJobs about the problems with the site that employees have discussed.

1.4.4 Employee Benefits

The USPTO currently has a section on the career site about benefits. This page is quite informative in telling about federal benefits and some specific USPTO benefits. Therefore, the current “core benefits” link on the career web site should be included in the college career site as an “Employee Benefits” page. However, extra emphasis should be placed on flexibility of work schedules, since so many employees are satisfied with

this at the USPTO. Also, the teleworking section is a bit unclear on the current site and, therefore, the section should be taken out of the “Employee Benefits” page and stressed separately in a sub-heading. These sub-headings should include:

- Salary and Recruitment Incentives
- Job Security
- Graduate School Reimbursement
- Teleworking

The salary table on the USPTO career site is confusing and there are no explanations to accompany the table. On the *Salary and Recruitment Incentives* page, the chart should be supplemented with an explanation of different GS-levels and Steps, and should also reveal the general starting salaries of Examiners (GS-5, GS-7, or GS-9) since; otherwise, the chart could be negatively deceptive. From the information provided on the existing web page, candidates with a GPA of above 2.95 can not ascertain that they will start as a GS-7 from the table. In addition, the recruitment incentives chart should follow the salary chart, along with an explanation of who is eligible for the incentives.

Next, there should be a strong emphasis on job security, since this is an attractive feature of federal employment. The *Job Security* page should contain only a paragraph or two about the importance and value of job security at the USPTO. Whereas other companies require special funding to run regular operations, the USPTO can assure job security to its employees.

A *Graduate School Reimbursement* page will be extremely attractive to students who would like to further their education. The USPTO offers reimbursement for graduate work pertaining to an employee’s field of study after one year of service at the office, and law school tuition compensation after two years of service. It is common for Examiners to take advantage of the law school reimbursement program, but the USPTO also pays for work towards other graduate degrees, such as a Master’s degree. This feature will attract college students to the office.

The last sub-heading under the Employee Benefits page should be titled *Teleworking*, which would describe the ability to work with laptops from home. Since the USPTO offers laptops for overtime work at GS-9 and hoteling at GS-13, they should

promote these programs to potential applicants. Hoteling is especially attractive to employees with family and friends in other regions of the US. With these programs, employees can choose where to live after only a few years of service at the USPTO. In addition, the ability to use laptops outside of the office makes overtime convenient.

1.4.5 USPTO Environment

College students moving to D.C. want to know about the availability of social organizations and exciting activities in the area. Therefore, the “Work/Life Balance” page should reflect the lively side of Washington, D.C. and the ease of adjusting to the new area. There is currently a “Work/Life Balance” menu option on the career site, which lays out important information about the fitness center, Patent and Trademark Office Society, and transportation subsidy. These features should be included on the college career site, along with diversity, the USPTO campus, and a section about entertainment in Washington, D.C. Therefore, the page titled “USPTO Environment” should include the features that are currently on this page of the career site, but the three sub-headings should include:

- Diversity
- USPTO Campus
- Life in Washington, D.C.

The USPTO employs people of different gender, race, ethnicity, and background working at one campus. These employees interact regularly to form a comfortable work place. Therefore, the diversity of the office should be stressed under a *Diversity* sub-heading. In the literature review, the team found that diversity is a key aspect of a career site, since it helps to attract people from different backgrounds and, therefore, unique individuals. Uniqueness is important in business and, therefore, the USPTO should approach diversity to gain professionals with various personalities.

Next, a virtual map of the USPTO should be included on the *USPTO Campus* page. As of now, there is a “USPTO Campus” page on the career site, which has a link to a map of the campus. To this, the team would like to add an option to view the interior/exterior of each building. In addition, users should be able to view which TCs

are associated with each building. An interactive map with links will help to improve this site.

Also, the ability to view entertainment options in the area is extremely important for college students. D.C. has plenty of fun and excitement to offer, which should be emphasized on a college career site. Everything from sports to musicals to bars and clubs can be utilized in the city, making it a lively place for recent graduates to transition from college to career. The different entertainment options, including Metro availability and national monuments, can be found in Appendix 4.

1.4.6 Campus Events Schedule

The page regarding campus events should provide different calendars for different events, such as career fairs at universities, info sessions, interview and resume workshops, and interviews at the USPTO. Thus, headings for each event should be listed on this page with the calendar right below it.

1.4.7 Contact Us

A separate button on the menu should be reserved for the hiring contacts, including HR professionals. Generic “1-800” phone numbers can deter candidates from calling the office. Therefore, direct lines to USPTO HR professionals should be included on the Contact Us page. Currently, the “Hiring Contacts” page on the career site discloses the contact information of SPEs in each TC. This content will be necessary on the college recruitment site as well. Lastly, a main street address should be included for mail items, along with directions to the main USPTO campus in Alexandria.

1.4.8 Comments

An option for feedback should be provided to visitors to continuously improve the web site. A brief explanation of the benefit of these comments to the USPTO would be useful. Visitors should be asked to comment on any aspect of the web site or application process in a textbox.

The team wants to stress that other pages on the current career site, such as “Reporting to Work” and “Financial” are useful tools for candidates to view. Therefore,

the USPTO may consider adding these sites to the suggestions listed above. In addition, the college career site from section 1.4 has a focus only on patent examination. Therefore, a note about trademark and corporate positions could also be added to the web site.

1.4.9 Features from Fortune 500 Companies' Career Sites

Fortune 500 companies have the money to spend on their web site and some recruit engineers and scientists too. As they are successful, the team reviewed their sites for inspiration. In their opinion, a section with resume and interview tips, a video of an intern's experience, and an ability to "chat" with a recruiter are helpful and exciting features to include on the USPTO college career site.

2. USPTO Recruitment Strategy

Apart from a college career web site, the team examined all aspects of the USPTO's current recruitment and outreach strategy. University outreach is an extremely important part of recruitment, because it increases the USPTO's name recognition as an employer on university campuses. Through suggestions on universities, career fairs, campus radio pod casts, scholarships, social networks, loan reimbursements and web-cam interviews, the team hopes to strengthen the current recruitment strategy.

2.1 Targeted Universities

In order to increase the effectiveness of college recruitment, the USPTO must carefully analyze which universities around the U.S. they should visit. While the USPTO should continue to keep a strong recruiting relationship with schools that have a history of employment at the USPTO, they should also focus on schools with reputable engineering undergraduate and graduate degrees, which award many degrees. Also, it is important for the universities to be devoted to national service and diversity. Appendix 2 categorizes the top universities in each of these areas. Table 8 is a summary of the findings in Appendix 2, and shows the recommended universities for the USPTO to work at recruiting.

Table 8: Top Target Universities for Recruitment

School	Recruitment Value
Cornell University	5
University of Michigan	5
Georgia Institute of Technology	4
Penn State University	4
University of Illinois	4
MIT	3
Johns Hopkins University	3
North Carolina State University	3
Ohio State University	3
Texas A&M University	3
UC San Diego	3
UC Berkley	3
University of Texas	3
Stanford University	3

Compiled by Elaina Nichols, 2007

Due to the nature of the work, those with an analytical mind are likely to succeed in the job. Engineers with a desire to work on the creation and design of products are more likely to be unhappy with a job as Patent Examiner. Therefore, it may be beneficial to recruit at universities that award degrees in general engineering, or science and technology, such as Wentworth Institute of Technology or Dartmouth College. Also, many online universities, such as University of Phoenix, Virginia College, and South University offer degrees in General Engineering. Students with these degrees have the technical knowledge and interest in the subject, but may not be as interested in design.

The USPTO also provides an enticing program: Law School Tuition Reimbursement. This program should be advertised at schools with strong pre-law and IP programs, such as Cornell and Franklin Pierce, or at schools which have a dual engineering and pre-law program, such as Dartmouth College, Case Western Reserve University, and Southern Methodist University.

Even if an employee leaves the USPTO upon completion of their law degree, the USPTO has still benefited 6 years of work from that one employee. Most employees that

leave do so within the first 3 years, particularly the first year. Therefore retaining an employee for six years is beneficial for the Office.

2.2 Career Fairs

The USPTO currently attends career fairs in thirty states, with hires in every one; however the strategy can be improved and strengthened. The career fairs should be staffed with not only SPEs, but newer employees who are recent graduates. Also the USPTO should send alumni to college career fairs. This is a practice recommended by many in the recruitment industry, and used by employers at career fairs. SPEs should not be the only USPTO employees attending the career fairs. Sending SPEs out constantly for recruitment hurts production, and new patent Examiners need them for training and to answer questions. HR staff should also attend the career fairs to lessen the burden of the SPEs. HR staff can be educated on all of the aspects of the Patent Examiner job, in order to field questions during the career fair.

The career fair table should have a large, visible sign and the table attractive and interesting. There should be useful give-aways, like pens or notebooks, as opposed to one of the current light-up bouncy ball. This is a fun toy, but it has no practical or useful function. A pen or notebook will be used more and may serve as a constant reminder of the USPTO. Also, the USPTO can attract attention and applicants to their booth by offering a raffle. For example, the USPTO can offer an Ipod raffle to all of the students that submit a resume, or schedule an interview.

2.3 Employee Referrals

According to HR, about 40-60 percent of current USPTO employees found their job through an employee referral. Although the USPTO does not need to offer current employees incentives to recruit friends and family, they may want to send out email reminders for encouragement. The emails can be sent out at various times through out the year and may be sent out more or less frequently according to TC and hiring needs.

2.4 Radio

The USPTO could develop a podcast placed on college radio web sites that is exciting for college students in order to stimulate interest in the organization. The podcast would contain information about the USPTO and employment opportunities. Using campus radio stations for advertising will help the USPTO to reach out to college seniors. These stations usually play music that entire campuses can enjoy and, therefore, a wide variety of students listen to the stations. By targeting colleges in the area, the USPTO can increase its name recognition to college seniors who won't have to relocate.

2.5 USPTO Scholarship

To attract the best candidates and employees, the USPTO should set up a scholarship for engineering students. The full or partial scholarship would sponsor an engineering student with an interest in intellectual property, in their junior or senior year, who has demonstrated outstanding academic achievement at his/her respective university. Applicants applying for the scholarship would submit a transcript, letters of recommendation (at least 1 from a professor in their major), short essays (for example, on academic and professional goals and aspirations, and something that inspires them), and an example of a completed engineering project or assignment that showcases their research, analysis, and writing skills. The USPTO can decide the number of scholarships awarded and the university and major of accepted students, depending on current recruiting and hiring needs. For example, if there is a need for electrical engineers the scholarship can be granted to an outstanding electrical engineering student. The USPTO must develop a committee devoted to the scholarship. It may consist of HR employees, SPEs, and other upper level management. This committee will determine the terms and conditions of the scholarship, a set of criteria to judge applications, the review of all applications, and the final decision on award recipients.

The application and competition process of the scholarship will increase USPTO name recognition on campuses nation wide. It also improves the USPTO corporate image, as a generous employer, invested in helping students with their education. Additionally, it will provide the USPTO with a pool of talented employees.

2.6 Social Networks

Facebook is the number one site visited and used by men and women between the ages of 17 and 25 (Goldberg, 2007). Since the USPTO is looking to recruit employees within this age range, it would be beneficial to advertise and recruit on the social networking site, Facebook, because eighty percent of all college students nation wide have a registered profile on the site (DiMicco, 2007).

The USPTO can create and maintain a Facebook profile page at no cost. The page will be used for educational information about the USPTO, and a tool for advertising and recruitment. The profile site may include information on how and where to apply, a discussion board where students may ask questions, links to the USPTO career web site, career opportunities, photos of the USPTO campus, recruitment videos, links to articles in the news about the USPTO. Also, the USPTO can highlight a “day in the life” of an employee.

The Facebook profile may contain much of the same information that will be placed on the college recruitment web site. The only difference is that the information is displayed on a different platform, and can serve as a supplement to the career web site. A human resources staff or another employee familiar and comfortable with using Facebook can be placed in charge of maintaining the profile page.

2.7 Student Loan Reimbursement

In order for the USPTO to continue to be competitive with the recruitment, hiring and employment opportunities of the private sector, they should consider offering employees student loan reimbursement. According to funds available for this, the USPTO can pay a certain amount per year towards a government granted federal student loan. Currently, the USPTO offers tuition reimbursement for law school as well as graduate coursework. However, those who elect not to take advantage of these programs could alternatively receive reimbursement for student loans.

This would be another enticing and attractive benefit that could be used for recruitment of college graduates. Graduating students have the burden of finding a job, as well as paying off large student loans. A loan reimbursement program would be an attractive incentive to join the USPTO.

2.8 Virtual Job Fairs and Webcam Interviews

Most hires come from the east coast, but the USPTO could attract candidates from the entire U.S. if it participated in virtual career fairs. It will increase name recognition as well, because virtual career fairs are becoming more popular. Examples of virtual career fairs or companies that provide them are:

- Preferred Jobs – Online Job Fair. This site provides booths for companies looking to hire technical people.
- Michigan Collegiate Virtual Job Fair. Organized by many universities and colleges, this site provides chat rooms for employers and students.
- University of Maryland. The University holds virtual job fairs.
- Second Life. This is a virtual world where TMP has held job fairs and could provide assistance to the USPTO.

Alternatively, the career site could offer the option of doing an interview via webcams. Students who are interested in applying for a job at the USPTO and have access to a webcam should be able to schedule an online interview. The recruiter and the applicant won't have to travel and, as long as the quality of the streaming is good, the online discussion can function just like an in-person interview.

3. Outreach Suggestions

Name recognition is extremely important. The team suggest several ways of increasing it by developing and increasing relationships with universities.

3.1 Co-op Program

Co-op programs are a good way to recruit and hire college students as full time employees upon graduation. In order to become a Patent Examiner, it takes the completion of an eight month long training program in the Patent Training Academy. Some employees at the USPTO expressed concern about a co-op program, because students will not go through the Patent Training Academy to learn about the patent examination process. However, before the creation of the Patent Training Academy, Examiners were only given a two-week training period. Therefore, it is possible to train

students in less time on certain aspects of the job on which they can work on during the semester-long program.

The USPTO wants to develop a co-op program that will be beneficial and useful to both them and the students. The USPTO can develop a brief training program for the student workers when they first arrive. Some aspects of the job that can be taught in a short amount of time, and do not need a great amount of supervision are classifying, searching, and summarizing references.

Students could work to classify each patent application that comes into the different TCs and the appropriate art units that they fall under. This would require the student to read the application, understand the technology, and recognize which art unit it applies to. Currently, there is an initial classification done by the Office of Initial Patent Examination (OIPE), and then Examiners and SPEs further classify the cases into specific art units. By having student employees classify the cases, the Examiners have more time to examine patents. Students could also use the software and search databases to search for prior art. Patent Examiners would benefit, because it would reduce the amount of time they spend searching. A great deal of their time is devoted to determining the novelty of a patent application through searching. Also, after the Patent Examiner has checked over the prior art references the student has searched for, the student can write a summary of the references, which the Patent Examiner can use in the patent examination process.

Through the co-op program, students would get a sense of the work a Patent Examiner does, the way the USPTO works, and the culture and environment. After an initial training period, the student would learn through experience and working with Patent Examiners. If the student then accepts a job with the USPTO upon graduation, he or she will already have begun a great deal of the training process, and will be less likely to leave because he or she will be familiar with the job. Even if some students decide not to work at the USPTO upon graduation, the office still benefits because the students will work during the semester to help with examination and will give the Patent Examiners more time to work on additional applications. Also, a co-op program will increase name recognition among college campuses.

3.2 Patent Course

There is no major or concentration in college that focuses on the patent examination process. Engineering and science students have little exposure to intellectual property either, and are generally unaware of it. In order to stimulate interest in patents, trademarks and the Patent Office, the USPTO should develop an intellectual property course in partnership with local universities, such as the University of Maryland, George Washington University, or Virginia Tech.

A USPTO employee, such as a Training Academy instructor, can prepare lectures and teach students. The class can meet once or more often, and if it is difficult to have a Training Academy instructor come in each week, there can be a guest lecturer teaching a different topic. If it is too difficult to physically send a teacher to the university, the class can be on-line, and students can log in, complete readings, lecture notes, assignments and assessments, all electronically on the internet.

3.3 IP Seminar for University Professors

In addition to an IP course at surrounding universities, the USPTO can hold seminars for university engineering professors. The USPTO can invite engineering professors and department heads from universities of interest for recruitment. The USPTO may also attend conferences for engineering professors, such the annually held American Society for Engineering Education Conference, to present the IP lectures. During the seminar professors may learn more about intellectual property, patents, and the rights and protections granted to patent holders, through lectures, workshops and guest speakers. Professors may take the knowledge and information from the day-long seminar, and integrate it into their engineering and design courses. The USPTO may also supply the professors with a power point presentation or DVD which can be used in lecture, in order to teach students more about intellectual property.

The seminar will increase name recognition among university professors, who will in turn, pass the information they have learned on to their engineering students. It also will help get more engineering students interested in patents and the office. This form of outreach is important for recruitment.

3.4 Information Sessions

In addition to attending career fairs, the USPTO should also conduct information sessions at the universities from which they recruit college graduates. The purpose of these sessions is to highlight the attractive aspects of the USPTO as an employer, interest students to apply, and increase name recognition. The information sessions should be conducted throughout the year, not just during career fairs. They should also be advertised through the university's career center to ensure that the attendance is worth the time and expense. SPEs and experienced Patent Examiners are the most qualified and experienced to talk about the job. The information session should include all of the technical details of the job and therefore HR is less qualified to do these.

The USPTO can provide food and beverages, as well as brochures, recruitment DVDs, and other materials about the job. At the end of the information session, the SPEs may answer student questions, collect resumes, and encourage interested students to apply.

3.5 On-Campus Club Presentations

Each university has many extra-curricular and academic clubs and organizations. The USPTO can present or make a speech on a topic of interest for a student club or organization based on an engineering or science discipline. For example, a Patent Examiner from TC 2100 can make a presentation to a campus chapter Institute of Electrical and Electronics Engineers (IEEE) club about new technology in the industry they are examining. During the presentation, the Patent Examiner could show enthusiasm about all the new and exciting technology he or she examines at work. This will present the USPTO as an interesting work place where employees are constantly learning.

By making these presentations, the USPTO increases name recognition, and spotlights the Office as an exciting, interesting place to work, where employees can specialize and become an expert in their field of interest through patent examination.

4. Retention - Tracking Patent Examiner Classes

Currently, there is no comprehensive or systematically gathered information available regarding why Patent Examiners chose to leave their jobs. The team suggests tracking several classes that start the Patent Training Academy for several years. After each year, data should be collected from the people who left to see what area their college degree was in, which TC they worked for, if they worked in the private sector prior to working at the USPTO, and how long they worked for the USPTO. This information might be used to draw conclusions on what type of people are generally unhappy at the USPTO, and will help monitor retention problems.

Conclusion

Several factors contribute to the success of a business. One essential factor is the recruitment strategy and the ability to hire top professionals. The USPTO currently has a growing backlog of patent applications and needs to hire more Patent Examiners. Therefore, the team has examined the current recruitment methods used by the USPTO and provided recommendations for the overall approach to attract young engineers and scientists.

Although the USPTO has been able to hire over 3,300 Patent Examiners in the last three years, it has been difficult to retain them. This is a particularly troublesome loss for the USPTO, because of the intensive training which each new employee receives. Patent examination is a unique trade and, therefore, most of the knowledge necessary for the job is acquired at the USPTO. Each new employee goes through an eight month-long training program. With Patent Examiners leaving within the first few years, the cost of hiring becomes too high and productivity is negatively influenced. It is thus important to recruit highly qualified candidates who understand the nature of work at the USPTO. The team has developed suggestions for content on a college career site to attract those candidates. The information for these suggestions is based on research in business and psychology journals regarding personnel management and web recruitment. In addition, the team conducted interviews with Patent Examiners and upper-level management, HR staff at the USPTO and other companies, a personnel psychologist, web developers, Career Development Centers at various universities, an advertising recruitment agency, and engineering students.

The first issue was to identify the right candidate for the job. The team found that the ideal Examiner needs to be an independent worker, decisive, technically literate, detail oriented, a skilled communicator, and an analytical thinker. Suggestions for content on a college career site were developed based on these skills and traits. To be effective, this site must be easy to use and contain detailed information regarding the job, salary, benefits, career path, work culture and the area where the company is located. The job should be portrayed in two different ways; it needs to sound appealing to job

seekers, but it also needs to be realistic to attract the right candidates. Of the Examiners leaving the USPTO, only 28% said they knew what the job entailed before starting. Therefore, a compatibility test should be included on the career site, so applicants can determine whether they fit the Patent Examiner profile.

The second issue was evaluating the current hiring and application process. The application process needs to be simplified, because it is confusing and too labor-intensive, according to new hires and a current USPTO candidate. Too much information needs to be read and entered manually, deterring potential candidates.

Thirdly, the USPTO should employ alternative recruitment methods to increase their name recognition. Currently, college students come in contact with the USPTO through coursework or at career fairs. To increase name recognition and the number of applicants, it is important to establish close relationships with schools that have strong engineering programs and a commitment to diversity and public service. Strong partnerships may be established by attending career fairs, holding information sessions, developing a co-op program, and creating an intellectual property course for local universities.

Based on the information gathered, the team made recommendations for the college career site, which were delivered to the USPTO in the form of storyboards, simulating what the pages of the site could look like. These sites should be simple, easy to use, and have a consistent design throughout the site. The content must be extensive and detailed, portraying the Patent Examiner position in an attractive and realistic fashion. In conclusion, the recommendations that the team has offered will allow the USPTO to create a strong college recruitment web site and increase name recognition through alternative recruitment methods.

Appendix 1: List of References

- “Accessibility overview,” Washington Metropolitan Area Transit Authority (2007). Retrieved on 11/16/2007 from <http://www.wmata.com/accessibility/accessibility.cfm?fromMenu=Accessibility.1>
- Backhaus, Kristin B., Stone, Brett A., Heiner, Karl. “Exploring the Relationship Between Corporate Social Performance and Employer Attractiveness.” *Business & Society*. 41(3) (2002):292-318.
- BAE Systems Career Website. “United States: College Events.” (2007) <http://www.baesystems.com/Careers/CareersinYourCountry/US/CareerEvents/CollegeEvents/index.htm>, accessed October 31, 2007.
- Barr, Stephen. “To Recruit on Campus, Use E-mail, Dude.” *The Washington Post*, October 26, 2007; page D04
- Breaugh, J.A. “Recruitment: Science and practice.” PWS-Kent Publishing, Boston (1992).
- Breaugh, James A., Greising, Leslie A., Taggart, James W., Chen, Helen. “The Relationship of Recruiting Sources and Pre-Hire Outcomes: Examination of Yield Ratios and Applicant Quality.” *Journal of Applied Social Psychology*. 33(11) (2003): 2267-2287.
- Bretz, Robert D., Gerhart, Barry., Rynes, Sara L., “Recruiter Perceptions of Applicant Fit: Implications of Individual Career Preparation and Job Search Behavior.” *Journal of Vocational Behavior*. 43 (1993): 310-327.
- Brown, D. “Unwanted online job seekers swamp HR staff.” *Canadian HR Reporter* 17 (7) (2004): 1-2.
- Brown, Matt. “Dreamweaver article.” Retrieved on November 14, 2007, from, http://www.adobe.com/devnet/dreamweaver/articles/dwmx_design_tips.html
- Buchanan, Bruce. “Government Managers, Business Executives, and Organizational Commitment”. *Public Administration Review*. 34(4)(1974): 339-347.
- Burkhard Works: Creative Ingenious, “Radio Advertising Costs Less Than You Think!” (2005) Retrieved 9/26/2007 from http://www.burkhardworks.com/Radio_Advertising_Costs.htm.
- Career Consulting Corner, “Interviewing Tips.” Retrieved Nov. 1, 2007. <http://www.careercc.com/interv3.shtml>

Chen, Q. & Wells, W.D. "Attitude toward the site." *Journal of Advertising Research*, 5 (1999):27-37.

"City Data-Alexandria City, Virginia." Retrieved on November 17, 2007 from http://www.city-data.com/county/Alexandria_city-VA.html

"Class of 2007 Postgraduate Report." Cornell Career Services, Cornell University (31 July 2007). Retrieved on November 16, 2007.

Clemson, Lindy, Taylor, Kristy, Kendig, Hal, Cumming, Robert G., Swann, Megan (2007), "Recruiting older participants to a randomised trial of a community-based fall prevention program." *Australasian Journal on Ageing*. 26(1) (2007): 35–39.

Cober, Richard T. et al. "Organizational Web Site Content and Style as Determinants of Organizational Attraction." *International Journal of Selection and Assessment*. 11(2/3) (2003): 158-169.

Cober, Richard T., Brown, Douglas J., Keeping, Lisa M., Levy, Paul E., "Recruitment on the Net: How Do Organizational Web Site Characteristics Influence Applicant Attraction?" *Journal of Management*. 30(5) (2004): 623-646.

"Colleges, Universities Radio Station Listing in MA, Massachusetts, USA," (2007) retrieved on 10/5/2007 from http://www.a2zcolleges.com/college_radio/massachusetts.html.

Collins, Christopher J., Jian Han. "Exploring Applicant Pool Quantity and Quality: The Effects of Early Recruitment Practice Strategies, Corporate Advertising, and Firm Reputation." *Personnel Psychology* 57(3) (2004): 685–717.

"Commencement Survey 2006." Georgia Institute of Technology Engineering Center. Retrieved on November 16, 2007.

Crewson, Philip E. "Public-Service Motivation: Building Empirical Evidence of Incidence and Effect". *Journal of Public Administration Research and Theory*. 17(4)(1997): 499-518.

DiMicco, Joan. "Identity Management: Multiple Presentations of Self in Facebook." Retrieved on November 9, 2007 from <http://www.joandimicco.com/pubs/dimicco-millen-group07.pdf>

Dineen, Brian R.; King, Juan and Ash, Steven R. "Aesthetic Properties and Message Customization: Navigating the Dark Side of Web Recruiting." *Journal of Applied Psychology*. 92(2) (2007): 356-372.

Dwyer, Catherine. "Trust and privacy concern within social networking sites:

A comparison of Facebook and MySpace.” Retrieved on November 29, 2007 from <http://csis.pace.edu/~dwyer/research/DwyerAMCIS2007.pdf>

“Engineering Class of 2007 Report.” University of Michigan Engineering Career Resource Center (2007). Retrieved on November 16, 2007.

“Facebook Fact Sheet”. Facebook.com (2007). Retrieved on November 29, 2007 from <http://www.facebook.com/press/info.php?factsheet>

Feldman, Daniel and Klaas, Brian. “Internet job hunting: A field study of applicant experiences with online recruiting.” *Human Resource Management*. 41.2 (2002): p.175.

Finlay, William, Coverdill, James E. “The Search Game: Organizational Conflicts and the Use of Headhunters.” *The Sociological Quarterly*. 40.1 (1999): 11-30.

“For Entrepreneurs: Costs for Advertising in Newspapers.” (2007) Retrieved on 10/5/2007 from <http://www.gaebler.com/Newspaper-Advertising-Costs.htm>.

Foster, Michael. “Recruiting on the Web. Smart Strategies for finding the perfect candidate.” McGraw-Hill. (2003).

Gatewood, R.D., Gowen, M.A., & Lautenschlager, G.J. “Corporate image, recruitment image, and initial job choice decisions.” *Academy of Management Journal*. 36 (1993):414-427.

Gautam, Kanak S., “A summation of online recruiting practices for health care organizations.” *The Health Care Manager*. 24(3) (2005): 257-267.

Gladden, Paul and Beed, Teresa. “Talent-tempting Web sites: increase your recruiting power in the digital age with an online presence that resonates with today’s college crowd.” *Journal of Accountancy*. 203(4) (2007): 42-43.

Glanz, Barbara A. “Handle With CARE: Motivating and Retaining Employees.” McGraw-Hill (2002) pgs. 1-5

Goldberg, Jason. “Jobster Launches New Facebook Application, ‘Employer Talent Networks’ (2007).” Retrieved on November 9, 2007 from http://jobster.blogs.com/blog_dot_jobster_dot_com/2007/07/jobster-launc-1.html

Harris, Michael M., Fink, Laurence S., “A Field Study of Applicant Reactions to Employment Opportunities: Does the Recruiter Make a Difference?” *Personnel Psychology*. 40(4) (1987): 4-25.

Hedlund, Julie A. “Patents pending: Patent Reform for the Innovation Economy.” *The Information Technology & Innovation Foundation*. (2007, May). Retrieved August 28, 2007, from <http://www.itif.org/files/PatentsPending.pdf>.

Herriot, P. & Rothwell, C. "Organizational choice and decision theory: Effects of employers' literature and selection interview." *Journal of Occupational Psychology*. 54 (1981):17-31.

"Hiring Efforts Are Not Sufficient to Reduce the Patent Application Backlog." United States Government Accountability Office (September, 2007). Retrieved on November 16, 2007.

Hu, Changya, Su, Hsiao-Chiao and Chen, Chang-I Bonnie, "The effect of person-organization fit feedback via recruitment web sites on applicant attraction." *Computers in Human Behavior*. 23.5 (2007): 2509-2523.

Internet World stats. (2007). Retrieved on September 15, 2007, from <http://www.internetworldstats.com/stats.htm>

Kerber, Ross, "Online job hunters grapple with misuse of personal data." *The Boston Globe*. October 1, 2007.

Konrad, Rachel. "Tech employees jumping jobs faster." Retrieved on November 13, 2007 from <http://www.news.com/2100-1017-241914.html?legacy=cnet>

Kovach, Kenneth A. "Employee Motivation: Addressing a Crucial Factor in Your Organization's Performance." *Employment Relations Today*. 22.2 (1995) p. 8

Lee, In. "The Evolution of E-Recruiting: A Content Analysis of Fortune 100 Career Web Sites." *Journal of Electronic Commerce in Organizations*. 3(3) (2005): 57-68.

Lemmink, Jos., Schuijf, Annelien., Streukens, Sandra., "The role of corporate image and company employment image in explaining application intentions." *Journal of Economic Psychology* 24 (2003): 1-15.

Lesonsky, Reiva, "Radio and TV Advertising: Turn up the volume on your ad campaign by adding radio and television spots to the mix." (2004) Retrieved from *Entrepreneur.com* on 9/30/2007; <http://www.entrepreneur.com/advertising/adsbytype/radioads/article21746.html>.

Levin-Epstein, Jodie. "Getting Punched: The Job and the Family Clock." *Clasp: Center for Law and Social Policy*. July, 2006 p. 1-3

Lifter, Mark, "Realistic Job Previews: A Smart Investment for Company and Applicant." *Perspectives on Talent: Insights from Aon Talent Solutions*. 1.1 (2005) pages 1-3

Light, Paul. The New Public Service. Brookings Institution Press, 1999.

Lynn, Jacquelyn. "Hire power - recruitment techniques." *Entrepreneur.com*, (1997).

MacKenzie, S.B. and Spreng, R.A. "How does motivation moderate the impact of central and peripheral processing on brand attitudes and intentions?" *Journal of Consumer Research* 18 (4) (1992): 519-529.

Marschall, Daniel. "Ideological Discourses in the Making of Internet Career Sites." *Journal of Computer-Mediated Communication*. 7(2) (2002).

Maurer, Steven D. and Liu, Yuping. "Developing effective e-recruiting websites: Insights for managers from marketers." *Business Horizons*. 50 (2007): 305-314.

Maurer, Steven D.; Howe, Vince and Lee, Thomas W. "Organizational recruiting as marketing management: an interdisciplinary study of engineering graduates." *Personnel Psychology*. 45 (1992): 807-833.

McCarter, John and Schreyer, Ray. "Recruit and Retain the Best: Key Solutions for the HR Professional." National Book Network. (2000).

"Mission and organization of the USPTO." *USPTO*. Performance and Accountability Report Fiscal Year 2006. Management's Discussion and Analysis. Retrieved on September 15, 2007, from http://www.uspto.gov/web/offices/com/annual/2006/30100_mission_org.html

Naff, Katherine C., Crum, John. "Working for America: Does Public Service Motivation Make a Difference?" *Review of Public Personnel Administration Online*. 19(4)(1999):5-16.

Nelson, P. "Consumer information and advertising." In: M. Galatin and R.D. Leiter, Editors, *Economics of information*, N. Nijhoff Publishers, Boston (1981).

Newton, Jon. (2005) "Podcast Popularity Booms." Retrieved on November 1, 2006 from <http://www.mp3newswire.net/stories/5002/podcasting.html>

Nielsen, J. "Designing web usability." Indianapolis, IN: New Riders Publishing (2001).

"Offers of Starting Annual Salaries, 2006-2007". University of Texas Engineering Career Advising Center (2007). Retrieved on November 16, 2007.

"Our strategy for change." Partnership for Public Service. (2007). Retrieved November 5, 2007, from, <http://ourpublicservice.org/OPS/about/>

Pastore, Michael. "Web Expands Role in Corporate Recruiting." *Clickz.com* (2000). Retrieved from <http://www.clickz.com/330331/print>.

Patent Examiner Positions: Benefits, United States Patent and Trademark Office Employment (2007). Retrieved on November 15, 2007 from <http://usptocareers.gov/Pages/PEPositions/Benefits.aspx>

“Patent Examiner Salary Rates.” United States Patent and Trademark Office Employment (2007). Retrieved on November 15, 2007 from <http://usptocareers.gov/Pages/Misc/SalaryRates.aspx>

Peters, K. “Five keys to effective e-cruiting.” *Ivey Business Journal*. 65(3) (2001):8-10.

“Recruitment Incentive Determination.” United States Patent and Trademark Office Employment (2007). Retrieved on November 15, 2007 from <http://usptocareers.gov/Pages/PEPositions/Benefits.aspx>

Rensselaer Polytechnic Institute. (April, 2007). 2005-2006 Annual Report/ Career Development Center/ Rensselaer Polytechnic Institute. Troy, NY.

Rothberg, Steven. “Ernst & Young Becomes First Employer to Use Facebook.” Retrieved on November 29, 2007 from http://www.collegerecruiter.com/weblog/archives/2007/01/ernst_young_bec.php

Rubaii-Barrett, Nadia and Recasino Wise, Lois. “From Want Ads to Web Sites: What Diversity Messages Are State Governments Projecting?” *Review of Public Personnel Administration*. 27(1) (2007): 21-38.

Rynes, Sara L., Bretz, Robert D., Gerhart, Barry. “The Importance Of Recruitment In Job Choice: A Different Way Of Looking.” *Journal of Personnel Psychology*. 44(5) (1991):487-521.

“Salary Survey.” The National Association of Colleges and Employers (NACE) (July 2007). Retrieved on November 17, 2007.

Schenkman, Bo N. and Jönsson, Fredrik U. “Aesthetics and preferences of web pages.” *Behaviour & Information Technology*. 19(5) (2000): 367-377.

Shoestring Graphics & Printing, “The Reality of Advertising Costs,” (1994) Retrieved on 9/30/2007 from <http://www.ssgfx.com/home/costs.htm>.

Sullivan, Danny. “Search Engine Marketing 101”. *ClickZ*. updates provided by Claudia Bruemmer , Internet Marketing Writer and former ClickZ Managing Editor. (2004). Retrieved on October 30, 2007, from <http://searchenginewatch.com/showPage.html?page=Webmasters>

Sullivan, John. “Retention Problems Begin During the Hiring Process.” *Ere.net* (01 October 2007). Retrieved on 12/5/2007 from <http://www.ere.net/articles/db/0F457C32D0A54B888BD8666C80DC7B95.asp>

“The simple way to create surveys.” SurveyMonkey.com. (2007) Retrieved September 2007, from <http://www.surveymonkey.com/>

“US Patent & Trademark Office Summary of Research.” TMP Worldwide (10 March 2004). Retrieved on October 23, 2007.

USPTO. “2006 Total Hires per University,” USPTO 2006 Human Resources Report (2007). Retrieved on 10/22/2007.

United States Patent and Trademark Office Strategic Plan 2007-2012. (2007). *USPTO*. Retrieved August 28, 2007, from <http://www.uspto.gov/web/offices/com/strat2007/stratplan2007-2012.pdf>.

“Vacation Days: Real vs. Perceived Time Off.” Winning Workplaces (2007). Retrieved on 12/3/2007 from http://www.winningworkplaces.org/forum/ask/vaca_days-real_vs_perceived_t_o.php

Veryzer, R. W., & Hutchinson, J. W. “The influence of unity and prototypicality on aesthetic responses to new product designs.” *Journal of Consumer Research*. 24 (1998):374-394.

“What Students Say About You.” University of Texas Engineering Career Advising Center (2007). Retrieved on November 16, 2007.

Williams, R. “The non-designer’s design book.” Berkley CA: Peachpit Press (2004).

Williamson, Ian O., Lepak, David P., King, James., “The effect of company recruitment web site orientation on individuals’ perceptions of organizational attractiveness” *Journal of Vocational Behavior*. 63 (2003): 242–263.

Wood, W. “Attitude change: Persuasion and social influence.” *Annual Review of Psychology* 51 (1) (2000): 539–570.

WRGW: GW Radio. “The Future of College Radio. Today.” (2007) The George Washington University, Washington, D.C.

Young, Jun and Foot, Kirsten. “Corporate E-Cruiting: The Construction of Work in Fortune 500 Recruiting Web Sites.” *Journal of Computer-Mediated Communication* 11(1) (2005): 44-71.

Zusman, R. Rebecca and Landis, Ronald S. “Applicant preferences for Web-based versus traditional job postings.” *Computers in Human Behavior*. 18 (2002): 285-296.

Appendix 2: Target Universities for Recruitment

Best Undergraduate Engineering Universities	Best Graduate Engineering Universities	Top Number of B.S Engineering Degrees Awarded	Top Number of M.S Engineering Degrees Awarded	Top Colleges Hired at USPTO	Top Schools Devoted to National and Public Service	Top Diverse Universities
Baylor University	Dartmouth College	Arizona State University	Air Force Institute of Technology	City College of New York	College of William and Mary	Brown University
Bucknell University	Duke University	Cal Poly State-SLO	Columbia University	Cornell University	Cornell University	Columbia University
Cal Poly State-SLO	Georgia Institute of Technology	Cornell University	Cornell University	George Mason University	MIT	Cornell University
Calif. State Poly. Univ.-Pomona	Lehigh University	Georgia Institute of Technology	George Mason University	George Washington University	Pennsylvania State University	Dartmouth College
Cooper Union	Michigan State University	Iowa State University	Georgia Institute of Technology	Georgia Institute of Technology	South Carolina State University	Duke University
Embry Riddle Aeronautical	Rensselaer Polytechnic Institute	Michigan Technological University	Johns Hopkins University	Johns Hopkins University	Stanford University	Emory University
Harvey Mudd College	Rice University	North Carolina State University	MIT	Morgan State University	Texas A&M University	Georgetown University
Kettering University	Johns Hopkins University	Ohio State University	North Carolina State University	New Jersey Institute of Tech	University of California, Berkley	Harvard University
Lafayette College	The Ohio State University - Columbus	Pennsylvania State University	Pennsylvania State University	North Carolina State University	University of California, Davis	MIT
Milwaukee School of Engineering	University of California, San Diego	Purdue University	Purdue University	Ohio State University	University of California, Los Angeles	Princeton University
Rose-Hulman Inst. of Tech	University of California, Santa Barbara	Texas A&M University	San Jose State University	Pennsylvania State University	University of California, San Diego	Rice University
Rowan University	University of Delaware	University of California, Berkeley	Stanford University	Polytechnic University	University of Chicago	Stanford University
San Jose State University	University of Maryland, College Park	University of California, San Diego	Texas A&M University	State Unveristy of New Jersey-Rutgers	University of Illinois- Urbana	UNC, Chapel Hill
Swarthmore College	University of Michigan	University of Florida	Univ. of Illinois, Urbana-Champaign	University of Florida	University of Michigan, Ann Arbor	University of California, Berkeley
Union College	University of New Mexico	University of Illinois, Urbana-Champaign	University of Florida	University of Illinois at Urbana	University of Notre Dame	University of Michigan
United States Air Force Academy	University of Notre Dame	University of Minnesota, Twin Cities	University of Michigan	University of Maryland	University of Texas, Austin	University of Pennsylvania
United States Coast Guard Academy	University of Texas at Austin	University of Texas, Austin	University of Southern California	University of Michigan	University of Virginia	University of Virginia
United States Military Academy	University of Toledo	University of Wisconsin, Madison	University of Texas, Arlington	University of Pittsburgh	University of Washington	Vanderbilt University

Compiled by Elaina Nichols, 2007

Appendix 3: Production Formulas

The production quota system is measured by two different equations; one for new hires (GS-7 and below), and the other for experienced Examiners (GS-9 and above). For a new Examiner the production formula is $((2N+D)/3) = BD$, and for experienced employees the formula is $((N+D)/2) = BD$. In these equations, “N” represents a new case and the first office action taken with the case. The variable “D” represents disposal, or the final office action of a case. BD represents balance disposal, which is used to determine an Examiner’s “docket expectancy,” or pace of work. Docket expectancy is based on the complexity of the technology and the difficulty of searching within a given technology. The ratio of an Examiner’s actual hours worked in a work period (two weeks) to the BD derived from cases completed in the period is that Examiner’s docket, which has units of hours/BD.

In order to compare an employee’s rate of production vs. a constant, an equation was derived to account for different GS levels and also different technologies. The ratio of docket expectancy to GS-Factor is an Examiner’s adjusted docket expectancy. Docket expectancy in this equation is based off of the GS-12 in each technology, and varies with the difficulty of each field (for example, Chemistry specialists are granted less time per BD than some Mechanical Engineers). To account for differences in GS levels, each grade uses a specific GS-Factor see Table A.

Table A: GS-Factors to Determine Production

GS	GS-Factor
5	0.55
7	0.7
9	0.8
11	0.9
12	1
13	1.15
14	1.35

Source: USPTO Career Web site, 2007

With these factors and the docket of an Examiner, the adjusted docket expectancy can be determined. For example: a GS-7 deals with three new cases and allows one case to become a U.S. Patent within a work period. His BD will equal $(2*3 + 1)/3$, or $7/3$. If this Examiner actually worked 65 hours on examining patents, then his docket is $65/7/3$, or 27.8 hours/BD. If the GS-12 in his field is allowed 28.6 hours/BD, then this Examiner's adjusted docket expectancy equals $28.6/0.7$, which is roughly 41 hours/BD. Given these conditions, the GS-7 Examiner completes a goal percentage of 147%, since the adjusted docket divided by actual docket is $41/27.8$. This system is a bit confusing on paper, but works well in practice.

Within a given work period, the quotas are not monitored as closely. Production goals per bi-week have been installed to keep Examiners on track. The first measure of production comes quarterly for all Patent Examiners. Therefore, an Examiner who completes 120% of production in one work period, but falls behind and completes only 90% in the next period, is still on pace to beat 100% of his or her production goal for the quarter. To advance to a higher GS level, an Examiner must work for six months at a production goal that is half-way between the employee's current level and the desired GS level. If the Examiner succeeds and reaches the production goal for the next GS level, which is over 100% of that Examiner's current production, then he or she will be eligible for the promotion at the end of the year. When advancing through the career path at the USPTO, it is difficult to say the exact percentages that an Examiner will need to reach in order to be promoted. Different factors, such as difficulty of technology and GS levels play into the equations.

Appendix 4: Washington, D.C. Information

The D.C. Metro system is well organized and easy to use for people who are new to a big city. Especially busy during rush hour, the Washington Metro covers 1,500 square-miles and transports 3.5 million people throughout D.C. (Washington Metro, 2007), Maryland, and Virginia. There are five lines that run through the system: Red, Orange, Yellow, Green and Blue. Each station has maps of the entire Metro system, which is easy to follow and brings people virtually anywhere in the D.C. area. In fact, the USPTO campus is located approximately five to ten minutes from the King Street Metro station on both the Blue and Yellow lines. A free shuttle bus is available between the station and the USPTO campus. All desirable attractions in D.C. are within walking distance from respective Metro stations.

Monuments that can be found in the D.C. area are famous throughout the world. As the national capital, Washington is a political hub. The White House, located at 1600 Pennsylvania Avenue, is only a short walk from the McPherson Square Metro stop. The building adjacent to the White House is the Eisenhower Building, in which the cabinet conducts business. In between Constitution Avenue and Independence Avenue, one can find the national mall, which includes the area between the Capital Building and the Lincoln Memorial. This area includes attractions such as the World War II Memorial, the Smithsonian, and the Washington Monument. There are always football, soccer, or Frisbee games being played. In addition, running is popular in the areas around the monuments. Next, the Jefferson Memorial is located on the Potomac River across from Independence Avenue. The scene is beautiful because of the water, boats and the regular flight of airplanes overhead, which are flying into Ronald Reagan National Airport. Outside of the immediate D.C. area are other monuments, such as Arlington National Cemetery and the Pentagon. Washington, D.C. is arguably the most historic city in the United States, and the incredible monuments and landmarks show the importance of the capital.

Museums are a huge tourist attraction in Washington and are often free. The Smithsonian provides fifteen museums in Washington, D.C. that are located within the mall or close by. These museums include exhibits on air and space, natural history,

American Indians, and various branches of art. The Smithsonian is easily accessible, as it is located on the Blue or Orange line and the museums are all free of charge. Other museums in the Washington area include the International Spy Museum and the Black Fashion Museum. The large number of museums in the vicinity of D.C. causes a lively area for tourists and Washington-area residents who enjoy the occasional site-seeing. These attractions are famous internationally and provide some of the best exhibits in the world.

For those new employees that enjoy sports; Washington is an amazing area to find collegiate and professional athletics. Collegiate sports can be witnessed at the various colleges in the area, such as George Washington University (GWU), University of Maryland (UMD), and Howard University (HU). This includes all different activities at various levels, since schools range from Division III to Division I with respect to athletics. Many schools within D.C., Maryland, and Virginia are within walking distance from the Metro. For example, UMD is in College Park, Maryland, which is a stop on the Red line. The Verizon Center, which is home to the Washington Wizards of the NBA and Capitals of the NHL, is located within a block of the Chinatown-Gallery Place Metro stop in Washington. Next, the Washington Redskins play at FedEx Field in Maryland, which is a short distance from the Morgan Boulevard Metro station on the Blue line. The Washington Nationals are an emerging D.C. sports franchise in baseball, and one can find their stadium by taking the Blue or Orange line to the Stadium-Armory station. In Washington, fans can attend the games at sports bars. Sports in Washington receive a lot of popularity from D.C. residents and fans are quite loyal to their teams.

Another feature that D.C. offers is theater. Within Washington, there are over ten theaters for opera, plays, and Shakespearean tragedies. Such theaters include the Discovery Theater and the Warner Theater. The shows cover all different backgrounds and cultures, providing entertainment for all different personalities. In addition to theaters, clubs and bars host musicians and bands on weekends to liven up their crowds. There are also concert halls in the area, such as Constitution Hall, which host various styles of music and different comedians and speakers. In Alexandria, there is one well-known music hall, called the Birchmere Music Hall. This hot spot is the scene of many kinds of music, ranging from Christmas concerts in December to Dave Matthews Band

shows. It is located in downtown Alexandria, which is close to various bars and restaurants.

Lastly, recent college graduates are interested in knowing about the nightlife in D.C. to determine whether the city is a good fit for them. There are numerous exciting areas for young adults within Washington, including DuPont Circle and Georgetown, which are both close to the Metro. These sections have plenty of restaurants for all budgets and include lively bars for young D.C. employees to enjoy. Because there are so many colleges in the area, these bars are geared toward a younger crowd and include dancing and loud music. LaForgia, a Patent Examiner, told the team that Adams Morgan, a region next to DuPont Circle, is a wonderful place for recent college graduates because of the bars and the number of other young adults in the same area. Another popular area is Crystal City, where various sports bars are open to the public and other restaurants are regularly filled with people. In addition, Pelligrino says that he finds Crystal City to be an excellent place to live and that many other USPTO employees have found housing in the area.

Appendix 5: Fortune 500 Company Web Site Analysis

1. Constellation Energy in Baltimore, MD

The nation's leading supplier of competitive electricity to large commercial and industrial customers.

<http://www.constellation.com/portal/site/constellation/menuitem.5fd77931119a74875fb60610025166a0/>

Specifics of the career site: Site has a practice skill test for the applicant, which the applicant must complete before getting an interview. There are also videos with employee statements. Overall, the site is simple and easy to use.

2. Dominion Resources, Inc. in Richmond, VA

Dominion is one of the nation's largest producers of energy

<http://www.dom.com/jobs/index.jsp>

Specifics of the career site: Has a pre-employment test for a variety of positions. You must apply for a position and be selected before being invited for employment testing. The site contains interview and resume tips and an intern interview video. There is a special page for student opportunities. Overall a pretty good web site.

3. Du Pont

DuPont offers a wide range of innovative products and services for markets including agriculture, nutrition, electronics, communications, safety and protection, home and construction, transportation and apparel.

http://www2.dupont.com/Career_Center/en_US/

Specifics of the career site: Has a university recruiting site with little info. At one point, there wasn't an option to go back to main career site once you went in. It has a survey, which applicants can complete to provide feedback about their application process. Overall the site has good information and was easy to use.

4. General Dynamics Corp in Falls Church, VA

General Dynamics owns Gulfstream.

Gulfstream designs, develops, manufactures, markets, services and supports the world's most technologically advanced business-jet aircraft.

<http://www.gulfstream.com/careers/>

Specifics of the career site: Their website is very simple. It has all the information, but it is not very inspiring. There are only three colors, no images, and no videos.

5. Jacobs Engineering Group in Pasadena, CA

Jacobs offers full-spectrum support to industrial, commercial, and government clients across multiple markets. Services include scientific and specialty consulting as well as all aspects of engineering and construction, and operations & maintenance.

<http://www.jacobs.com/employment/index.asp>

Specifics of the career site: This is an international corporation and the prominent info the career site gives is a search for job openings. At the bottom, in small letters, there are

links to benefits and the culture. There is little information and again the web site is not inspiring to apply.

6. Johnson & Johnson in New Brunswick, NJ

Johnson & Johnson, through its operating companies, is the world's most comprehensive and broadly based manufacturer of health care products, as well as a provider of related services, for the Consumer, Pharmaceutical and Medical Devices and Diagnostics markets.

http://www.jnj.com/careers/global/undergraduate_target/explore_opportunities/index.htm

Specifics of the career site: Busy web page with too much information. Has a student career site divided into grad, undergrad and MBA. No main menu, so hard to use. Links to other pages are too small. The application process is explained, but there is too much to read.

7. Lockheed Martin Corp in Bethesda, MD

Lockheed Martin is the largest provider of IT services, systems integration, and training to the U.S. Government.

<http://www.lockheedmartinjobs.com/>

Specifics of the career site: Web site is busy and lot of info. Can subscribe to receive career updates. There is a possibility to chat with a recruiter. Has a site for college students and there are employee testimonials.

8. Lucent Technologies in Murray Hill, NJ

Communications.

http://www.alcatel-lucent.com/wps/portal!/ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4w38vAGSYGZrqb6kShiBvGOCBFfj_zcVP0gfW_9AP2C3NCIckdHRQCIDusE/delta/base64xml/L3dJdyEvd0ZNQUFzQUMvNEIVRS82X0FfNEcw

Specifics of the career site: Special link for opportunities for students and recent grads. Too many buttons and links on one page.

9. Merck & Co. in Whitehouse Station, NJ

International developer, manufacturer and distributor of pharmaceuticals.

<http://www.merck.com/careers/>

Specifics of the career site: Site has a "How to prepare for your interview," a lot of photos, and videos of employee testimonials. Overall a very good site.

10. Pepco Holdings in Washington, DC

PHI is one of the largest energy delivery companies in the Mid-Atlantic region.

http://www.pepcoholdings.com/careers/careers_home.html

Specifics of the career site: Hot jobs of the month, little employee quotes all over site, little information, option to store resume with Pepco. The FAQ page is helpful.

Appendix 6: Patent Examiner Testimonials

The flexibility of work schedules at the patent office is one of the biggest advantages of working here. At the actual office, people can choose from a regular 8 hour work day, flexible 5-4-9 or 4-4-10 schedules where you work extra hours on certain days so you can take either 1 or 2 days off a week, or a maximum flex schedule where you can work different hours each day. There are also options so that you can work remotely from home, such as telework, which allows you to work at home one day a week, or hoteling, where you work completely from home. I am on the maximum flex schedule and I really enjoy the fact that if I need to run an errand or go to the gym during work hours, that I am able to "flex out" and take a break during the day, and make up the hours later. The flexibility also offers workers the ability to be able to arrange for child care or other events more efficiently since people are able to come in during early morning hours and leave work earlier, or vice versa. Overall, the patent office has set up its schedules so that people are able to work during their most efficient hours, and are able to enjoy their time off to the fullest. For example, if you are a morning person you can do your hours early, and then have the afternoon off to take care of errands, or to take a class to further your education or just do something fun.

-Lisa Caputo

The USPTO provides a wealth of opportunities to socialize. The Training Academy offers an environment where it is easy to meet recent college graduates and other new hires on the first day at the Patent Office. Furthermore, there are co-ed softball and bowling leagues that provide a chance to meet supervisors, more experienced examiners and other USPTO employees in a comfortable atmosphere. In addition to athletic leagues, there are a variety of organizations that sponsor regular happy hours.

Like the USPTO, Washington DC has an abundance of recent college graduates. Many of these young Washingtonians take advantage of the various athletic and social leagues offered in DC and compete in softball, football, dodge ball, and kickball leagues. After the games, the competition continues at DC bars that sponsor the various

organizations. These gatherings usually go late into the night in the various neighborhoods of DC, like Adams Morgan and Georgetown.

-Christian LaForgia

To preface why I came to the USPTO, I should include a bit about my background: I have a Bachelor's Degree in Mechanical Engineering from the University of Vermont as well as a Master's from MIT & a Ph.D. from the University of Pennsylvania, both generally related to energy and environmental policy. I also have several years experience as mechanical/research engineer in the private sector earlier in my career. After completing my Ph.D. in 1994, I moved to Washington, DC and spent several years working at nonprofit and academic institutions in the Washington, DC area, including working as a research fellow at a policy think tank and as an adjunct professor at American University.

While interesting and rewarding, this career path did not offer a great degree of job security or high income, and also made little use of my engineering/technical expertise. Wanting to stay in the Washington area, having an affinity for the public sector, and being interested in getting re-involved with technology and innovation, the USPTO was an obvious place to consider for employment. I attended a job fair and then came into the office for a personal interview with my prospective SPE, with whom I established an instant rapport. We agreed that I would work on temperature and humidity control systems, an area generally related to my energy interests and background, and one that continues to afford me the ability to review applications over a wide range of technologies where temperature control is involved - anything from semiconductor manufacturing, to wine cellars, to automotive air conditioning systems. The USPTO provided great salary potential, an excellent lifestyle, and the opportunity to be intellectually involved in a broad array of technologies that would not have been possible in almost any other setting.

-Marc Norman

On interesting technologies:

- Bioethanol for waste cellulose
- Nanoparticle coatings for consumer products
- Consumer tissue products with improved absorbency and feel
- Optical fibers with increasingly faster data transmission speeds
- LCD glass for flat panel TV's
- Improvements in safety glass for automobile windshields
- Numerous processes for recycled glass and paper

-Eric Hug